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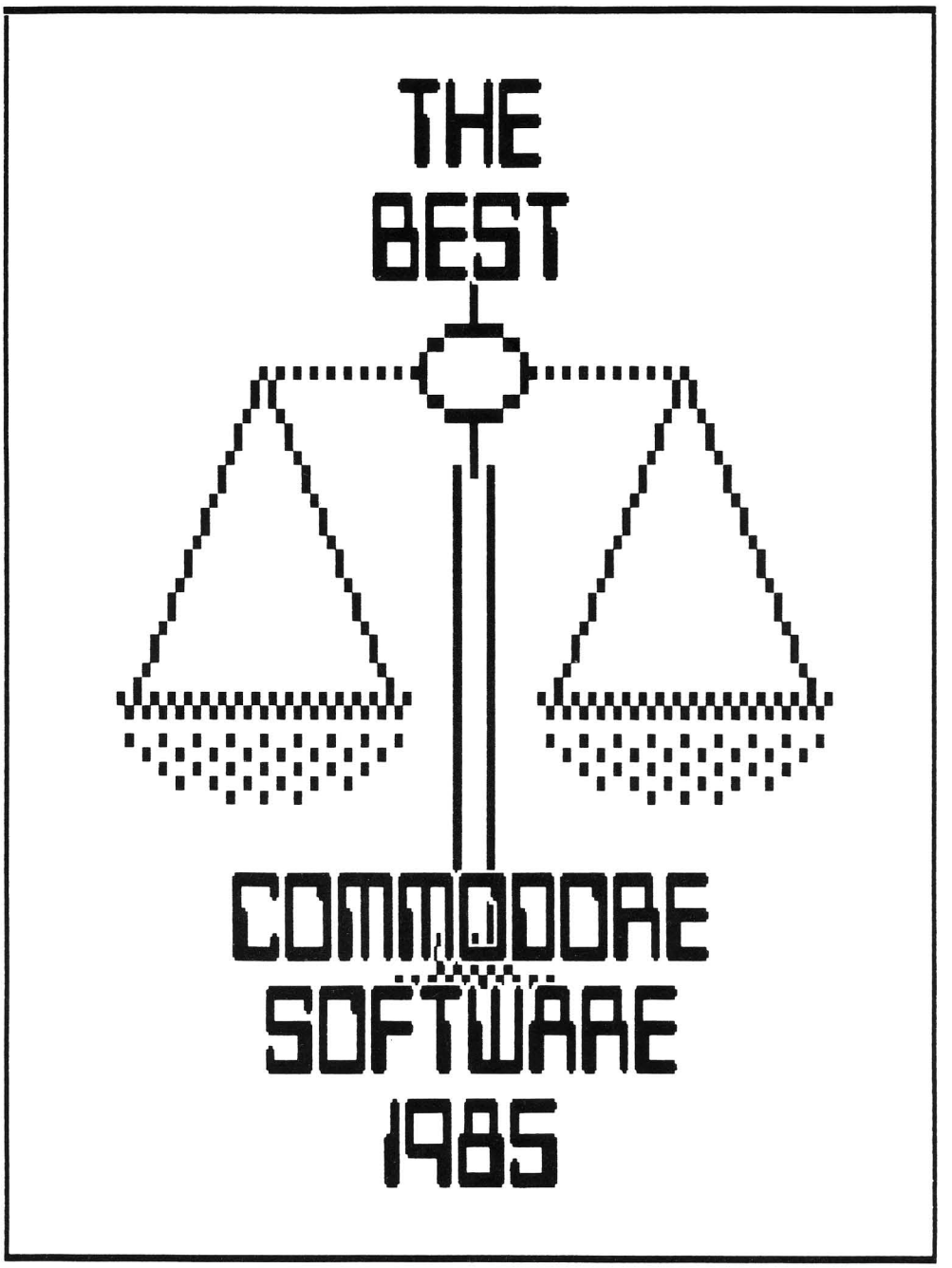
The MIDNITE SOFTWARE GAZETTE

A BI-MONTHLY JOURNAL OF NOTES, REVIEWS AND ARTICLES



by Jim Strasma, using The Print Shop from Broderbund

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THE MIDNITE XPRESS NOTES

Midnite Meanderings

AT LAST

What can I say? We bit off more than we could chew. This issue turned out to be longer and more work than any other we've attempted, at a time when too many aspects of our lives and work are up in the air. But we expect the delay was worthwhile -- no where else will you find all the best programs for all the machines Commodore has ever made reviewed under one cover. What was the hardest part to do? No question about that -- it was tracking down all the companies that aren't there any more. Knowing how many companies have disappeared over the past eight years should give you a real chill the next time you buy a protected program. In any case, since this issue took so long to prepare, we're delaying our "best hardware" issue until Fall, and including a bit of Commodore and other news below.

COMMODORE NEWS

After all the hoopla, just how good is the C-128? Commodore users are greeting it like a long-lost friend, brandishing on it the warmth they would have given the Plus/4, if it had been 64-compatible. Other industry observers have fallen into three very different camps. One, typified by Compute! magazine, treats the C-128 as a dim also ran in a glamor sweepstakes won by Atari's prototype ST series. Another, typified by Computer and Software News, ignores the C-128 and Atari entirely, to laud Commodore's unannounced Amiga Lorraine. A third view, my own, is that the C-128 is Commodore's important announcement this year, and that when the Amiga appears, 64 owners will be disappointed once again, no matter what it does, because "Bug Zappers" won't run on it. As for Atari, "when you see it here, it's real."

In my opinion, the C-128's real competition isn't Atari or the Amiga, or even the Apple][. Rather, it's the resurrected IBM PC jr. With a 128K jr system including a single drive and an RGB monitor under $950, and software compatibility throughout the IBM PC line, jr addresses the same market as the C-128 more closely than anyone has suspected. The key to the long-term success of the C-128 will be its system price. No one will object to the CPU listing for $300, (and discounted to $250). But the 1571 drive will have to come in near or below its rumored price of $375, and the 1902 RGB monitor at about its rumored price of $300 to make the whole system compare well to jr. Otherwise, given equal costs, many consumers who don't already have a computer will prefer compatibility up into PC-DOS rather than down to the 64 and CP/M. On the other hand, Commodore should be as successful at getting 64 owners to trade up to the 128 as it was at getting VIC owners to buy the 64. Close to 3 million people already have a Commodore software library that makes the C-128 their only logical purchase. At the right price, the C-128 will capture a very nice portion of the low end market, and in the process resurrect CP/M from premature burial. A year or so from now, I expect Commodore owners to be the dominant force in the CP/M world, just as they are now the dominant force in telecommunications. Compatibility with other machines will be a new concept for Commodore owners, but they'll take to it like a duck to water.

One casualty of the new market may be Commodore's new Basic 7. Given a choice between running DBase II, or writing an equivalent file manager in BASIC, most folks will go for DBase, and the same will be true of many other applications. Also, only CP/M can take full advantage of the speed and capacity of the new 1571 drive. Few Macintosh owners even

noticed that their new machine didn't come with a programming language, and many Commodore owners wouldn't care either.

One note of interest--only Commodore could have pulled off the C-128. With 3 largely unrelated processors, 2 video chips, and other similar waste in its design, the C-128 could only have come from a company which makes its own chips. (Commodore is vertically integrated from sand to slot.) People will use the 128 in totally different ways, but the complexity of their choices will be cheerfully hidden beneath the stylish punk rock cover.

Another machine I thought Commodore wasn't serious about is still alive and popular -- the new Lap computer. Though still a prototype when shown here, the lap has drawn a lot of favorable comment, and could be a good seller. Its claims to fame are a large, fast LCD display, and compatibility with Commodore disks, printers and Plus/4 BASIC. Given an external monitor, it would be all the computer many people need.

ELSEWHERE IN THE INDUSTRY

Big news this month is IBM's new PC-2, due to be announced before you read this. I won't speculate about its features, but hope they include a way to go beyond 640K RAM. Hard though it will seem for Commodore owners to believe, that isn't enough to do all that a personal computer should. We are also hearing som bad news about Apple. Apparently their Superbowl lemming ad had some internal validity, as they persist in throwing the Mac at Fortune 500 companies, despite ample evidence that Mac's real market is Yuppies. It's beginning to affect the bottom line, and Apple recently had to close some factories for the first time. (Commodore also closed one factory for 2 weeks about the same time.) Tandy is still offering great sale prices on many of its models, and Kaypro expects to be first out the door with a PC AT clone. (Just in time, too, as Commodore's C-128 will seriously threaten some older Kaypro models.) Atari claims it will have its new line on sale in April, and some people believe them. If they make it, their new machines will have some very good features, such as a cheap hard disk Commodore badly needs.

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WELCOME

THE BEST COMMODORE SOFTWARE for 1985

How can owners of Commodore personal computers keep track of all the programs available for their machines, much less select the best ones for their needs? The proud owner of a Commodore computer has to choose from over 6,000 public domain and commercial programs. This special issue contains independent user reviews of 150 of the best software packages for popular home and small business applications.

SCOPE

We will report on programs requiring special hardware in a similar issue next fall, including many communication devices, graphic aids (light pens and graphic tablets) and programming aids. Many top notch programs were omitted, because their producers may not still be in business. These include **Wordcraft** from Cimarron; **Mychess II** and **Kwikload** from Datamost; **Benji's Space Rescue, Cell Defense, HESCat,** and **Mr. Robot and His Factory** from HES; and **Terminal 40** from Midwest Micro Associates. You may able to find these products locally. If your favorite program is not included here, it very likely is either too new to have been reviewed, or we don't share your high opinion of it. As usual in Midnite this issue is only the opinion of our reviewers. You can keep up with new programs as they are released through these pages.

PUBLIC DOMAIN VS. COMMERCIAL PROGRAMS

Commodore user groups across the U.S. and around the world offer many free programs for your computer. **When members of these groups write and share their programs with the world, the programs are said to be "in the Public Domain," and everyone benefits.** Others can add their ideas and help iron out "bugs." The only cost of obtaining such programs is time to copy them (or pay a copy fee) and the media used (cassette or diskette). Many public domain programs rival the commercial software. If you cannot find a public domain program reviewed in this issue, you may order it from Midnite Software, 1238 Richland Av., Lincoln IL 62656, for our usual $15 copy fee, including diskette and postage.

PROGRAM INFORMATION INCLUDED IN EACH REVIEW

REQUIRED EQUIPMENT

Many Commodore software programs need several pieces of equipment (hardware) in order to work properly. Some others are useful, but optional. The most commonly needed hardware includes a Commodore disk drive, a printer, an interface and a joystick.

Disk Drives: Unless specified, all programs that come on diskette assume you are using a 1541 disk drive for the 64 or VIC and an 8050 disk drive for the CBM or PET. If the software review specifies a 1541 disk drive, the earlier model 1540 disk drive will also work on the VIC 20. If the ratings state that the program requires a CBM disk drive, you should be able to use any properly interfaced Commodore-compatible disk drive, including at least the 4040, 2031, 1540, 1541 and MSD models. The most common interface used to connect these alternate disk drives is the Batteries Included BusCard II. Be sure to try the program with the interface and other disk drive before you buy it, to make sure it works properly.

Printers: If used, **most software requires the printer to be connected to the 64 or VIC through the serial bus,** just like the disk drive. Printers for the CBM/PET machines

are normally connected through the IEEE 488 port. Unless otherwise stated, any hardcopy (printed paper) that includes "graphic" characters (picture symbols instead of alphabetic or number characters) will print properly on some Commodore dot matrix printers (such as the 1525 and MP8Ø1 models). Some non-Commodore printers, like the Epson or Prowriter, can also handle graphic characters in programs equipped to use them. If the review specifies an ASCII printer, this means it will work with most non-Commodore printers.

Joysticks, Game paddles and Trackballs: If a review specifies a joystick, game paddles or a trackball, any Atari-type will work with the 64 or VIC. If it is listed as an option, this means the program also allows keyboard control.

WARRANTIES (COMPANY SUPPORT)

Computer programs are not like toasters. If you buy a toaster and it fails right away, you go back to the store for another one, the store fixes it, or sends it off for repair. Either way, people who want to sell toasters know they can't sell broken ones and then refuse to fix them for free. In the computer world it is different. Computer programs are almost never completely free of errors. Usually there are small problems in newly introduced programs. **The company may call them "undocumented features"; everyone else calls them "bugs".** Even if the program works exactly the way the company wanted it to, it may still not work exactly the way you thought it would. Whose fault is that?

Liability

Then there is the problem of liability. If a plane crashes because of a computer error, can the company that sold the program be sued? And for how much--the price of the program or the price of the airplane? Because of fears about liability, many computer companies pack special notices with their programs that claim they are not responsible for any bad things that happen as a result of using their program. Furthermore, many claim they also aren't responsible if the program doesn't work correctly. Some even claim they aren't responsible if it fails even to load into the computer and run. Computer warranties vary much more than toaster warranties.

Types of Computer Warranties

The best warranty is called a full warranty. This gives you real protection, with details spelled out a few years ago by Congress. Look for it whenever possible, but remember that even a full warranty is only as good as the company offering it. **Next best is a limited warranty.** This is like a full warranty except as listed within the warranty. Sometimes the exceptions could fill a book, but in general such companies still stand behind their products in case of trouble. **Far more common is a "media" warranty.** This means the company sells the program absolutely as is, with only one promise--if you can't get it to load into the computer, the company will replace the cassette or diskette within a stated period. Some companies duck the whole problem, by saying nothing about a warranty. In such cases, you are probably protected by a general warranty provided by state laws, but it might not be worth the trouble involved in getting justice under it. **Worst of all,** and amazingly popular, **is the disclaimer of warranty.** This claims that the company is not responsible for anything at all. If the product arrives without a program diskette, or short a manual, tough! Some of the largest and otherwise most reputable companies in the industry insist they can't promise anything to anyone without being sued by everyone. Sometimes they do provide support anyway, as when the large car companies quietly fix cars with certain problems. Demand it!

Customer Rights

As a customer, avoid products that omit or disclaim warranty, especially if the product is protected against copying or repairs. If you must buy a product whose warranty you dislike, don't sign anything agreeing to its terms, not even a warranty card. Some of the things companies claim in warranty statements won't stand up in court unless you agree to them in writing. If you do have a problem, go to the company first. The good ones will try to help, within reason. If the company refuses to give reasonable help, don't give up.

A lawyer may be able to help, or the postal inspector (if you bought it by mail), or the better business bureau or consumer protection agency in your area. If all else fails, try writing the computer magazines, such as the Midnite. They can warn other users, and possibly persuade the company to help you.

COPY PROTECTION

Archival Backups

A persistent issue between those who create and those who buy computer programs is copy-protection. **Recent Supreme Court decisions affirm the right of the legitimate buyer of a computer program to make one spare copy of the program (called a backup) for "archival" purposes.** The idea is that computer diskettes and cassettes are imperfect, and to be sure you have one that works at all times, you need a spare stored safely elsewhere. The software companies, on the other hand, are all too aware that many customers make extra copies for friends, or even to sell. This is illegal, but nonetheless often done.

Methods of Copy Protection

As a result, many companies now do things to their programs to prevent them from being copied or backed up. These tricks are called "copy protection," and come in three main varieties. **First are cartridges.** Most people can't make their own cartridges. The disadvantage of cartridges is that they cost more than cassettes or diskettes to make, and can only be used one at a time unless you also buy a "motherboard" that holds several.

The **second method of copy protection is called a "dongle."** It functions like a key, but isn't called that because "key" in computing usually has an entirely different meaning. A dongle is a small plug that fastens to one of the ports of the computer. Only one dongle can be attached to a port at a time, so you can't use two products together that require a dongle on the same port. The advantage of protection via dongle is that the user can make as many back-up diskettes or cassettes as desired.

The **third method of copy protection is called DOS (Disk Operating System) protection.** It works by corrupting the diskette in such a way that attempts to copy or back-up the program diskette will fail. This method is currently VERY popular with companies, because it is cheap. Network users also like it because it allows a dozen or more computers to use the same copy of the program. The disadvantage of DOS protection is that it makes the diskette less reliable than normal, and some methods may even harm the disk drive itself. Cassettes can also be protected, using methods similar to DOS protection for diskettes.

Buy Unprotected Programs When Possible

As a consumer, your best choice is programs that are not protected against copying at all. Please thank the companies that sell unprotected programs by buying your own copy instead of passing copies around. **If you are buying for a school or large office, you may prefer DOS protection** to other forms. However, be sure the diskette is guaranteed to load, and if the program is for serious use, such as a word processor, make sure it comes with a backup diskette, or if not, buy a second copy. Otherwise, without a doubt, your program will fail, at the worst possible time, and you will wait a week or more to get it replaced (if the company is still in business).

Everyone else is better off with cartridges or dongles. Cartridges are quicker to use of course, but either will be far more reliable than a copy-protected diskette or cassette. Just try to minimize the number of times you plug and unplug things from the computer ports. Otherwise you will eventually wear off the gold on the contacts of the cartridge and the port itself, and have to replace them.

The **long-term solution of the copy protection problem is program prices low enough to discourage copying**, similar to phonograph record and cassette prices. Meanwhile, please respect sellers' copyrights, and look for programs that allow you to make backups.

Commodore Software Buyers Guide by Machine

by Jim Strasma

Type	Choice	VIC 20	Commodore 64	CBM/PET
Education	1)	Pipes (Creative)	Sky Travel (Commodore)	Comal 1.1 (Comal U.G.)
	2)	Instrum. Flight Simulator (Academy)	Just Imagine (Commodore)	Vanilla Pilot (Tamarack)
Game	1)	Choplifter (Creative)	Ghostbusters (Activision)	Microthello (A.B. Computers)
	2)	Sword of Fargoal (Epyx)	Intl. Soccer (Commodore)	Millipede (Nibbles & Bits)
Graphics	1)	Super Expander (Commodore)	Doodle (City Software)	PIC Chip (Skyles E.W.)
	2)	Graphvics (Abacus)	Logo (Commodore)	Supergraphics (A.B. Computers)
Sound	1)	VIC Music Composer (Thorn EMI)	Musicalc (Waveform)	4 Part Harmony (A.B. Computers)
	2)	Synthesound (HES)	Master Composer (Access Software)	Piper (Abacus Software)
Finance	1)	Color Accountant (Prog. Institute)	Complete Personal Acct. (Prog. Inst.)	BPI Gen. Accounting (BPI)
	2)	TOTL Time Manager (TOTL Software)	eZZebooks.64 (San Diego user g.)	PETspeed 3.0 (Small Systems Eng.)
Data Manager	1)	Practifile (Webber Software)	Superbase 64 (Precision Software)	Super Office (Precision Software)
	2)	TOTL Label 2.1 (TOTL Software)	The Consultant (Batteries Included)	Silicon Office (Bristol)
Spread-sheet	1)	Practicalc (Micro Soft Intl.)	Calc Now (Cardco)	Calc Result (Handic Software)
	2)	Busicalc (Skyles E.Works)	(Easy) Calc Result (Handic Software)	Visicalc (Visicorp)
Terminal programs	1)	VICterm 40 (Commodore)	Vidtex (Compuserve)	The Communicator (Amplify, Inc.)
	2)	The Terminal Disk (Midnite Software)	VIP Term (Softlaw)	STCP (Eastern House S.)
Word Processors	1)	Write Now! (Cardco)	PaperClip 64/Spell. (Batteries Included)	Expanded PaperClip (Batteries Included)
	2)	Wordcraft 20 (Commodore?)	Write Now! (Cardco)	Superscript (Precision Software)
Utilities	1)	VIC Micromon (Public domain)	Sysres (Solidus Intl.)	Basic-Aid (Public domain)
	2)	Programmer's Aid Cartridge (Commodore)	Micromon (Eastern House S.)	Micromon Plus (Eastern House S.)

Business Reviews: Accounting, finance & home economics

SYNOPSIS

These programs are useful in home finances and management. They include home finance and accounting packages, tax preparation programs, and inventories.

WHAT ACCOUNTING, FINANCE AND HOME ECONOMICS PROGRAMS DO

Any home business needs to keep accounting records. Not everyone needs the largest packages. Most accounting packages come in several separate modules to handle such needs as accounts payable, accounts receivable, a general ledger and an inventory. The better ones also handle a payroll and can write checks. The best will even handle order of entry/point of sale information and each state's tax tables.

Home economics is still a minor area of computer use, compared to games and other business needs. It **has been littered with forgettable little programs that do things you might just as easily do without a computer,** such as compiling recipe lists and figuring gas mileage. However, the potential for good home economics programs is growing, as prices continue to fall. For example, it is not yet practical to keep a perpetual inventory of food used, even though the computer could then compile weekly shopping lists in store aisle order of all needed replacement items. Why? Loading a computer program each time you open a can of peas takes vastly longer than jotting "peas" on a paper grocery list and finding them at random as you shop. **But that will change.**

There are already a few useful home programs. One is to inventory personal possessions. We all know we need to do it, to prove to the insurance company what we lost in case of fire or theft. By using a computer, we can also figure the up-to-date value of our possessions, including a depreciation factor. **Another useful application is a loan analysis program.** For instance, knowing the total cost of a given mortgage over a certain number of years can be VERY important. Our first computer paid for itself the day we used it to discover which bank offered the best mortgage on our first home; we saved enough on the mortgage terms to pay for the computer. Investors can gain a great deal from **investment analysis programs;** that is, they can protect themselves against losing more than usual to investors already using computers.

WHAT TO LOOK FOR (CHARACTERISTICS)

What is really nice in an accounting package is to be able to inexpensively run an entire small business on one or two modules, but easily add more specialized modules as the business expands. One caution about the general ledger though--it should show a true audit trail, and not allow anyone to erase entries--unless the owner will be the only user.

When you hear of a tedious home chore being automated, be skeptical until you are sure the computer will truly ease or speed the chore. Home budgeting, for example, is another chore that many have computerized, but of some fifty skilled computerists at a recent seminar, only two admitted even occasional use of such programs. On the other hand, one of the two happily uses a budget program every month to track the flow of funds in his family. We would agree **IF the information eased the annual horror of preparing income tax forms,** as some such programs do.

B.P.I. ACCOUNTING PACKAGE

Accounting system for the **CBM 8032 & 8050.** $395 each for 6 modules:
Accounts Payable, Accounts Receivable, General Ledger, Inventory, Job Cost, Payroll.
BPI, 3423 Guadalupe, Austin TX 78705.
Requires dummy ROM.
Reviewers: Brent Anderson, Jim Strasma, C. Wolters

Although this accounting system was first designed for a cash register operation, it is an excellent, easy-to-use package for most sales applications. The operator doesn't need accounting knowledge to run this accounting system. After setting up a chart of accounts and pertinent information, the modules are easy to run. Each module's demo teaches basics before running actual company records. One drawback is that all modules run slowly; reports can take hours to run.

The **General Accounting** module is highly recommended for a beginning package, since it is an excellent double-entry accounting package that does the general ledger, plus limited versions of accounts receivable (without an aged or detailed report history), accounts payable and payroll, cash receipts and disbursements, invoices, and purchased merchandise.. When more sophistication is needed, you can then add the individual Accounts Receivable, Accounts Payable and Payroll modules to do more detailed handling, such as check-writing and posting the data for use by General Accounting. This module has many nice features. It handles more than one company or department. A queue can run a series of commands. Makes standard monthly entries. Accounts and customers, payors/payees, vendors, and employees are related by a system of prompts which appear on the screen ready for data entry. Outputs trial balance, profit and loss, or any of the above journal/registers. Disk files are cleared by end-of-month, -quarter, or -year functions. But the system won't let you do that until you post, print journals and statements, and backup data disk. You can learn how the program works by using the sample set of books on a demo diskette that accompany the great manual/workbook. The workbook then leads you through customizing the package for your own accounts and printer. Even with limited accounting experience, I wouldn't be afraid to use BPI to computerize a set of books. Highly recommended.

The **Inventory** module accommodates only 2 costs (one in and one out), making you choose last in-first out, first in-first out, or average costing.

The **Job Cost** module would be good for a construction business.

The **Payroll** module holds 100 employees per 8050 diskette. It can be used for a company with multiple state employee taxes or multiple city taxes. However, you must order the correct annual federal and state tax tables separately, at a cost of $100 per year. Restauranteers must pre-deduct tip and meal allowances.

Bob Bergevin's school district in New York uses the **BPI General Ledger, BPI Accounts Payable** and a **Visicalc** program on the CBM 8096 to run their **school finances.** For an investment of less than $3200, any school district could do the same. The magic ingredient is a person who understands what is needed and how to get it going.

Richvale Telecommunications (10610 Bayview, Richmond Hill ONT L4C 3N8 Canada) provides a **General Ledger Expansion Package** for the **CBM 8032+8050** that corrects the major weakness of the BPI **General Ledger** (shared by most such G/L's). Normally, BPI erases all its detail data at the end of each month. The expansion package retains this data for the entire year. You can also get a report on transactions for any account(s) for the whole year. Although my review copy lacks a manual, the product is usable without it. The price is a steep $295, and it is DOS-protected. Still, if you use BPI's excellent **General Ledger**, you also need the RTC **Expansion Package.** Recommended.

THE COMPLETE PERSONAL ACCOUNTANT (64) or THE COLOR ACCOUNTANT (VIC)
Home accounting for the **VIC+16K** or the **64**, by David J. Hock and K.Y. Jones.
$75 cassette or $80 diskette.
Programmer's Institute, Div. of Future House, Box 3470, Chapel Hill NC 27514 (800/334-soft)
Requires CBM disk or Datasette. 1525 or Epson MX-80 printer optional
Limited 30 day warranty. BASIC. Unprotected. Uses sequential files.
Handles up to 99 accounts (up to 9 subcategories per account, 180 maximum)
Reviewer: Jim Strasma

Sold as **The Color Accountant** for the VIC and the **Complete Personal Accountant** for the 64, this program is a remarkably complete accounting system for such a small computer like the VIC or 64. Even the items that normally cost extra in a business accounting system, such as an appointment scheduler and a mail list, are included. Designed primarily for home use (it doesn't do payroll), it has 8 sections that record checks and deposits, balance your checkbook, record investments and loans, print checks, keep a budget, create graphs, record bills and appointments, and store a mail list. It should require less than an hour of data entry per month. Editing uses the full screen, and you can even search for a check (just like real life). The lengthy and otherwise very nice manual recommends that you keep all permanent files (such as the Chart of Accounts) on the program diskette--and then advises you never to save files on a program diskette! Fortunately, you can back up the program diskette, and then follow the first suggestion. Having all the files on one diskette will ease changes from one program to another within the system. If you don't like reading manuals, you'll also have the choice of watching a tutorial instead (included on the back side of the program diskette). Menus guide the user at every step.

The program only processes one checking account per file (and diskette). Both check and non-check information is fed into a Net Worth Statement, and a Statement of Income and Expense. All statements may be printed easily to the screen or to a printer. Account numbers are only 2 digits long, and the package includes a standard set of accounts that are very easy to alter. The STOP key has NOT been disabled, which might be a problem to newcomers, but experienced users will like being able to halt things. The program has extensive error checking and even lists lines you may want to GO TO after various disasters (keep it handy; the numbers don't make much sense). The program suggests entering checks daily, but this isn't necessary if you add them before budget reports. You can alter any check at any time (convenient, but make sure you trust the operator). Other nice touches: you can mark a check as tax-deductible, and the program knows about interest-bearing checking accounts and debit cards. This program is amazingly comprehensive, especially for the VIC. For the programmer, the package is both changeable and partly documented. (You'll want to alter some garish colors in the prompts.) You couldn't ask for more power in a small accounting program for the home. Highly recommended.

EZZEBOOKS & EZZEPAYROLL (formerly DATABOOKS & DATAPAYROLL)
General accounting package of 2 programs (CC DISK #2), by B. Prouty.
$50 diskettes (2) for the **64+1541** or **PET 4032+4040.**
Comm'Putoy Cult, Box 7776, San Diego Ca 92107 (CC DISK #2).
Requires CBM disk and CBM or ASCII printer. No stated warranty. Unprotected.
eZZebooks (PET) capacity: 500 vendors, 500 customers, 1000 invoices, 3000 journal entries and 171 ledger accounts.
eZZepayroll capacity: 100 employees.
Reviewer: Jim Strasma

eZZebooks (formerly Databooks) for PET: This is the ONLY full accounting package we've seen that works with a 40 column screen and a 4040 disk drive. It is also the only one to allow full use of both disk drives for data. With minor changes and smaller file sizes, it also works on the 64 (see below). Despite its small size, **Databooks** has some advanced features, such as lower case, and even prints its own simple forms. Its speed is adequate, and it can be compiled. The only problems in the manual are a small omission and no index. The manual includes sample printouts and author's phone number for help.

eZZebooks is fairly well protected against fraud with a disabled STOP key. Our need for editing and some inflexibility in preset relationships between accounts, eventually led us back to **BPI** for our Midnite books, but this program is still my second choice. Recommended to all, and highly recommended if you only have 40 columns.

eZZebooks.64: This accounting system comes as 3 large BASIC programs that can be listed and changed as needed, and includes a ledger, journal, accounts receivable, accounts payable and payroll. One program is run only once, to set up the system. After that, you simply load one program for payroll, and the other for general accounting; the two feed information back and forth as needed, to prevent the endless disk-swapping we've seen in other packages. One of the nicest (and ingenious) features is a code next to each question, referring to a matching explanatory paragraph in the manual. Other good features are a requirement that the books balance before ending a session, and refusal to modify account values without a journal entry (for an audit trail). There is also a simple two-level password system. Since the package doesn't come with a sample data diskette, it will take some time to learn, but once set up, operation is straight-forward. If you need an accounting package for the 64 that doesn't do weird things like try to destroy your disk drive when you back it up, consider **eZZe Books 64.** Updated disks (with the new, faster version) will be sent to registered customers for $10 to cover cost of disk and postage. **eZZePAYROLL.64** can be used independently or with **eZZeBOOKS.64,** posting the checks and payroll information to the ledger accounts. It is set up for California withholding, but changes for some other states are available. Highly recommended.

MAS ACCOUNTING PACKAGE SERIES

Accounting package for the **64**, by Info-Designs. $50-60 for each of 4 modules:
General Ledger, Accounts Receivable, Accounts Payable, Inventory Management.
Also available for the CBM at added cost, directly from Info-Designs.
Commodore, 1200 Wilson Dr., West Chester PA 19380 (800/662-2444)
Requires 1 or 2 CBM disk drives, CBM or ASCII printer. 80 column adapter optional.
90 day media warranty, telephone help for a fee.
Compiled BASIC. DOS protected. Backup diskettes $25. All modules use random files.
Reviewers: Brent Anderson, Bob Bergevin, Harold Stiffler, Jim Strasma, Caroline Wolters

Working together or separately, these 7 modules handle the finances of a small business. Though far too complex for the family budget, they can track income and expenses for such family enterprises as basement pottery shops, attic painting studios, and living room software houses. The accounting system is intended to be easy to use, but isn't. Expect to refer to the manual constantly. On the other hand, the power of the **MAS 64** package is impressive; its price, compared to programs of similar quality is quite low. (Potential buyers may want to consider that a pending lawsuit alleges copyright infringement by Info-Designs.

The MAS 64 General Ledger handles up to 1500 transactions and 300 accounts. It is one of the few such programs to use standard double-entry bookkeeping. It automatically posts journal entries to up to 5 debit and credit accounts in the ledger and prepares the usual financial statements (trial balance, balance sheet, and profit and loss) as often as needed without erasing journal entries. The program generates beautiful reports, journals, updates and financial statements. It will also insist that debits and credits are reasonable and balanced. A debatable feature is that you may alter the balance of an account without an audit trail. This allows fraud; however, a skilled user can also correct mistakes without a trace. Another negative feature of the **MAS General Ledger** is that it requires a lot of diskette-swapping in a single disk system, and is unreliable with Commodore's 4040 dual disk drive. Furthermore, the package alters the uncopyable program diskette. Do not use this system until you have at least one backup diskette. Harold Stiffler also reported a serious hang-up during a General Ledger update, and restarting the update compounded the error. For this reason, be sure you also maintain at least 2 backup disks for each disk file.

The MAS 64 Accounts Receivable module handles up to 150 customers, 375 invoices and 40 transactions. It tracks customers and invoices for family enterprises and feeds into the **MAS 64 G/L.** It automatically enters customer billing info, posts transactions to the proper customer and invoice, and prints invoices as needed. When payments come in, it can apply them to either a specified invoice or the oldest one. If a customer wants to charge something, you can immediately check how much they already owe. The module also prints monthly statements of unpaid items (and how long they have been unpaid) for each customer, plus a list of amounts owed, sorted by age of invoice. You select a number for the first invoice, and the program assigns future numbers. Invoices may include added comments and be figured with a variety of tax rates, discounts, and finance charges.

The MAS 64 Accounts Payable module tracks bills and invoices received, and can handle up to 100 vendors, 375 invoices, 40 transactions and 200 General Ledger accounts. It automatically enters billing information, posts transactions to the proper vendor and invoice or credit memo, and prints checks as needed. It also arranges unpaid bills by date due, and figures in the last date for any discounts offered, to get maximum use from each dollar. You can immediately check how much you owe a company and how much you've bought from them this year and last year. When entering new invoices, the program offers default answers to some questions. When processing transactions for transfer into the **G/L,** only 200 general ledger accounts can be mentioned in the same batch. You will waste two pre-numbered checks each time you set up the printer, and many companies will need more than the 40 check transactions allowed. Also, payments may not easily cover only part of an invoice.

The MAS 64 Inventory Management module keeps a perpetual inventory on 1800 items. It tracks orders, arrivals, sales and losses, with a full audit trail. Daily usage, re-order levels, and the best quantities to buy are calculated automatically. Up to three prices are maintained per item. Reports offered include product orders, worksheets for a manual inventory and price catalogs. The program has a good chance of detecting simple typing errors, with the help of a special check digit in each item number. It also calculates which items are among the top 15% in volume. It also considers both vendor and customer back orders when planning reorders. **MAS 64 Inventory Management** makes excellent use of the computer as an aid to simple scientific management of inventories, and preserves an audit trail. Even if you do not choose other **MAS 64** products, consider using this inventory package. Recommended.

CBM version: Info-Designs also provides modules for **Order Entry Point Of Sale , Payroll** and **Time Management/Client Billing** on the 8032. You would need all the modules. The **Order Entry/Point of Sale** module must be used with **Inventory.** It can fill a customer order, update the inventory, show the operator the amount of items in stock (or if on order) when the order is being placed, show quantity discounts, and generate an invoice with single entry. When linked with **Accounts Receivable,** it can give an immediate customer credit rating. You can change the tax tables in **Payroll.**

MAGIS PLUS

Complete accounting package for the **CBM 8032.** $2000(?) diskettes (2).
Sales, Expenses, Accounts Receivable, Accounts Payable, Inventory, General Ledger, Payroll.
Management Accountability Group, Box 346, 493 E. Clayton St., Atlanta GA 30603.
Requires 8050 disk drive and printer.
Unprotected. Compiled BASIC. 90 day free replacement warranty).
Reviewers: J. Paton Dellow, Peter H. Masterman

Designed for wholesale and retail businesses, **Magis Plus** includes a system diskette, data diskette and manual. The manual is complete and reasonably well written; the program also provides adequate screen prompts for beginners to operate. You can go directly from one menu to another without reloading the Main Menu; the menus include Sales, Expenses, Accounts Receivable, Accounts Payable, Inventory, General Ledger, Payroll, Data Backup and System Instructions. You can run trial balances and print a variety of reports to evaluate your present situation, using standard forms from a Georgia firm (however, the authors will

customize the program for special paper goods or features). The program prints checks and labels for Accounts Payable and Payroll. Inventory reports can show if stock levels fall below a specified percentage, and you can evaluate the performance of various departments within a business. In short, **Magis Plus** combines accounting with the ability to analyze problem areas and identify faulty procedures, although it cannot identify items important in larger operations like union contract costs. Being a "turnkey" program is its strongest point. The system requires little knowledge of computers or accounting practices, minimal training, and it's extremely forgiving and "bug-free." Compared to BPI, J. Dellow prefers **Magis Plus**, except for its high price. **Magis Plus** is a highly detailed and complete package. Highly recommended.

TAS-64 (Technical Analysis System)
Stock market evaluation program for the **64.** $85 for 3 diskettes.
Abacus Software, Box 7211, Grand Rapids MI 49510.
Requires 1541 disk drive. MODEM and CBM or ASCII printer optional.
DOS protected. No warranty, but thone support. Backup copy available for $6.50.
Reviewer: Lynn Harner

This program calculates eight stock market technical indicators. Analysis of the graphs (plots) of the indicators could aid in buy or sell decisions for cmmon stocks. It would be helpful to know something about technical analysis before using the program. However, for the uninitiated, the manual includes a discussion of technical analysis. Mastery of the 161-page manual and the program is a daunting task, but once accomplished, you get a lot for your money. To operate, his powerful program requires daily high, low, close, and volume data (or bid, asked, and volume data for OTC stocks). Information can be obtained from newspapers, Warner Computer Services, or Dow Jones. The online program hasn't worked properly with a Westridge modem. The program is understandably hard to use, considering its power and complexity. The three diskettes have to be switched often (the master program disk, the data disk, and the online programs disk for use with any online database). Charts generated by the program can be printed on a printer. The program worked nicely with a Gemini 10X printer. Highly recommended.

TIME ACCOUNTANT
Time billing package for the **CBM 8032 or B-128.** $400 diskette.
Image Software, 3678 Nicole, Las Vegas NV 89120
Requires 8050 disk drive and ASCII printer. PETSPEED-compiled BASIC. Dongle-protected.
Reviewer: Tom Zurkammer

The test version will hold up to 500 clients, while the marketed version uses the DTL compiler and will hold 800 clients. The package includes two diskettes (a Master disk and a Transaction disk), a 48-page manual, and a run-time key which must be placed on the first cassette port for the program to run properly. Is this package easy to learn and use, and flexible enough for individual user needs? Yes, **Time Accountant** receives an A+ in both categories. The manual is concise, well documented, thorough, organized and easy to read. Though written for people with a limited computer knowledge and experience, it would not bore people with some computer competency. **Time Accountant** is a powerful menu driven and flexible time accounting and billing package, containing many features and options to fit the user's needs. It is worth every penny, if your needs are time management and accounting, and it comes with a 30-day refund policy if it does not suit your needs.

Data managers and mail lists

SYNOPSIS

These programs store and selectively access information to generate answers, lists and reports. This category includes general data managers and mail lists.

WHAT DATA MANAGERS AND MAIL LISTS DO

Data managers are electronic filing cabinets. Typically, they hold as much information as a 3x5" card box. The information is usually divided into chunks the size of one 3x5" card. The whole card box may be thought of as a **file. Within the file, each card of information is called a record.** It represents all available information about one member of the set making up the file. That would be each different family in your Christmas card list. A still finer division, called a **field,** holds one item of information about a member of the set, such as a person's ZIP code, or the names of each child in the family, or the last year you sent the family a Christmas card.

WHAT TO LOOK FOR (CHARACTERISTICS)

The very best data managers handle several files at once--as if you had several related card boxes and could pull information from each as needed. Only two such programs, **Superbase** and **Silicon Office,** are now available for Commodore computers. Other data managers may handle multiple keys, but only on one file at a time. Another important feature of the best data managers is that **field and record sizes are almost unlimited.** Ordinary data managers have a **field size limit of under 80 characters,** because that is the most data that can be typed into one BASIC INPUT statement. Ordinary data managers **also limit records (total information for one name on a mail list) to under 254 characters** (the maximum size of one relative record on a Commodore diskette). For many uses these limits are adequate, but it's nice to be able to go beyond.

Another characteristic that separates better from lesser data managers is their **file type. The simplest data handlers use sequential files.** Usually, this means all their information is in memory at once. In one respect, this is good, because they can manipulate it very quickly. Those using a cassette drive must use this type, since cassettes only use sequential files. However, since a diskette can hold far more data than your computer, sequential file data managers hold less information than other types. For simple mail lists of under 100 names, a cassette drive is probably adequate. For anything larger, you will eventually need at least one disk drive. Because the first 1541 manual forgot to mention how to use relative files, many companies still use so-called random files instead. **Random files** do allow a data manager to fill an entire diskette with a single file of information, and look at any record within the file at any time. However, they are difficult to use and vulnerable to hardware problems. A disk command used to overcome such problems (validate) also erases them; therefore, we rarely recommend such products. Properly used, **relative files are better behaved than random files.** They make each record within a file (the family card within the Christmas list) the same size--usually 254 characters long. However, within that established length, each piece of information (field), like street address or number of children, can be different lengths from record to record. You can search for a specific record (family name) much faster using relative records than using sequential records. They are both more reliable and easier to access from other programs than sequential or random files.

Another feature in a data handler is how it sets up files. The simplest and best way to set up files is with a **full-screen forms editor.** With these, you simply draw a picture of where you want information placed on the screen. Less flexible systems make you set names and lengths of fields without seeing how they look, and the worst expect you to say in advance how many fields you need, and don't allow you to change your mind later.

Perhaps **the most important longterm feature** in a data manager **is its ability to restructure a file.** No matter how carefully you design a file, you will eventually wish to add, delete, move or change a field in some way. The best systems make this simple to do; most don't allow it at all. **Some data managers also cannot handle lower-case letters and commas; avoid them.**

Look for **other useful features.** You'll appreciate **speedy sorting and searching by various fields,** as when you change a Christmas list into ZIP code order before printing cards, or when you find everyone that neither sent nor received a card last year). **Flexible report formats** can print your information in any order and shape. Best for this is a built-in word-processor; next best is the ability to send information to a separate word processor, although that takes more time than built-in report and label abilities. If you will need financial information, **math capabilities** are a helpful part of most data managers. One other great blessing is **programmability**--the ability to automate sequences of commands. One way to do this is within the program. Another is by modifying a BASIC portion of the program. Programs which prevent such changes tend to be less useful than others over the long run. However, programs written entirely in BASIC are too slow. Before buying a data manager, test it with several hundred records.)

Less important are such features as **passwords** (ineffective against capable programmers, and unnecessary if you lock up sensitive information), and the ability to **link several diskettes into a single file** (such files are almost impossible to sort, and often unreliable.) No one program has all the desirable features. A few, however, come close. Most are also quite affordable. **Pay special attention to required equipment and compatibility with other programs you use (especially with your word processor).**

CODEWRITER (sold separately as HOME FILE WRITER and REPORT WRITER)
Application generator for the **64.** 2 modules, $50 each on diskette.
Codewriter Corp., 7847 N. Caldwell Av., Niles IL 60648 (800/621-4109 or 312/470-0700).
Reviewer: Jeff Lowenthal, Jim Strasma

We've rarely seen a product with better documentation and on-line helps, and few file managers offer more flexibility, particularly in the area of trapping faulty inputs. The full-screen editor and numerous prompts makes creating a file easier than any other data manager tested. Because both the data manager portion, called **Home File Writer,** and the report generator portion, called **Report Writer,** are ordinary BASIC programs and compatible with most hardware, you are free to add other features. Finished listings are readably spaced, and full of helpful REMs.

Home File Writer is much slower than machine language data managers. Its editing options don't meet Commodore's data entry standards (see the Utilities review of **Input Editor**), and can't handle commas. **Home File Writer** allows you to design your own record format for a database and then converts your design into BASIC. Finished programs have a few unneeded lines (delete 49999-50161, and 60000-). The manual is friendly and walks you through each step of a complicated process. Within the first hour, Jeff Lowenthal produced a filing system for several thousand LP records. When it became apparent that the program was not efficient, he easily redid it.

Codewriter's separate **Report Writer,** a weak link in many data managers, is very flexible and easy to use. It allows an 80 column by 58 row report, set up most any way, including 1-, 2- or 3- up mail labels. The format screen scrolls to show the whole report. It can also link dissimilar report formats in a report, with overall totals. The only painful part of making a report is manually copying 2 programs from one diskette to another. I consider this one of the most unique products I've tested. **Home File Writer** combined with **Report Writer** offers a needed alternative to proprogrammed file managers--something to most everyone, from beginner to expert.

THE CONSULTANT (formerly ORACLE or DELPHI'S ORACLE)

Database for the **CBM, PET** or **64**, by Dieter Demmer. $150 diskette.
Batteries Included, 186 Queen St. West, Toronto ONT M5V 1Z1 CANADA (416/596-1405).
Requires CBM disk drive and CBM or ASCII printer.
Protected by dongle in joystick port 1 (64) or ROM (CBM/PET).
One year media warranty. Written in machine language. Uses relative files.
Handles up to 1755 characters per field, 99 fields per record,
12,500 characters per record (64) or 9,000 characters per record (PET/CBM),
and as many records as the drive can hold.
Works with **Paperclip** word processor.
Reviewers: J. Paton Dellow, Jayne Schiek, Gary Stone, Jim Strasma, Craig Wittler

As a data manager, **The Consultant** destroys two living legends: it allows more than 254 characters in a record, and the ENTIRE program loads into memory. This is a data manager of great power (though it doesn't work between files). It combines simplicity with speed and gigantic records. Its records can also be kept sorted in several different ways at once. This means you can look up names in alphabetical order, and then immediately switch to printing out mailing labels in ZIP code order. You can even request a list alphabetically by name within each ZIP code. Because maintaining this order is complicated, do limit the number of sorts--with eight going at once in a large file, adding one name takes several minutes. (And if you get entirely carried away, an included "Supersort" program rapidly sorts files too large to sort normally.)

The Consultant provides easy ways to design mail labels and fill out pre-printed forms, two chores flunked by many data managers. On the minus side, mail labels are limited to 2 fields per line and (unlike good old **Flex-File**), you can NOT request an optional (and often useful) space between fields on the line. If you need still more flexibility, **The Consultant** information can be conveniently sent to most word processors, because it can read from a sequential file. It is easy to change the structure of a file, revise the appearance of a form, or convert from another data manager without typing everything in again. If you need to do calculations too, the current version offers limited math (add, subtract, multiply and divide), but with only one intermediate variable. It even offers optional multi-level passwords, to provide a bit of protection from prying eyes. It also has the ability to shift between ASCII and CBM printers. The report writer is fairly complicated, but very versatile; it can print out reports in almost any format. You may need "prompt cards" when learning this section. To continue a report line beyond 40 columns, just use a semi-colon.

The Consultant is blessed with an excellent and well-bound manual. There is also enough help within the program that skilled users will get by with only brief glances at it. It is menu-driven, but has no HELP menu. The tutorial is a must for new users--plan on 3 four-hour sessions. The program has excellent error handling; it is virtually impossible to crash. J. Dellow is currently maintaining several hundred records on equipment maintenance on his CBM 8032, each 1,355 characters in length; he bought **SuperDos** for his 8050 to realize the program's potential. At last we have a data manager able to handle mosts tasks. All it needs is the ability to relate files. Unless your information needs are truly unusual or exceedingly large, **The Consultant** can handle them. It is clearly one of the best data managers available for Commodore computers. Highly recommended.

THE MAIL DISK (formerly MAIL LIST 1541)

Mail list for the **CBM, PET** or **64**, by Chris Bennett, Jim Strasma, et al. $15 diskette.
Midnite Software, 1238 Richland Av., Lincoln IL 62656 (217/732-2703).
Requires CBM disk drive and CBM or ASCII printer.
Full warranty. Machine language. Unprotected.
Uses relative files. Handles up to 254 characters per field (30 as supplied),
127 fields (10 as supplied), 254 characters per record (150 as supplied),
and as many records as the disk will hold (1000 as supplied).
Works with any word processor that reads sequential files
Reviewer: Brent Anderson

In this combination mail list and data manager, you can store, edit and print up to 1000 records of mailing and other information per diskette. Each records hold the standard information fund on any mail list program--name, name of business or institution, street address, city, state, and zip. It also adds 1 or 2 phones numbers and up to 30 different catagories in which to store special data base information. It has many nice features. For instance, one may code each record according to categories, and later print only the records that match the chosen categories. There are many printing options, such as index cards or one-, two- or three-wide mail labels, printing in alphabetical or zip code order, and printing anything from short mail information to a full record. The diskette is full of instructions and documentation of the program principles, especially of relative records. When this program was used to send a newsletter to air force students who stay for a only few months, coding each of the records by departure date cut down greatly on wasted mailings. Unfortunately, **The Mail Disk** is a little slow on accessing records when there are more than a couple hundred. **The Mail Disk** is a very powerful, flexible and convenient package. A real bargain.

THE MANAGER

Data manager for the **CBM** or **64** by BNB. diskette.
CBM/PET version: $250 from CMD, 500 Steeles Av., Milton ONT L9T 3P7 CANADA
64 version: $50 from Commodore, 1200 Wilson Dr., West Chester PA 19380.
Requires CBM printer, and 1541 disk for 64 or any CBM dual disk for CBM.
Written in BASIC plus machine language. $5 replacement diskette.
DOS protected on 64 and cassette port dongle on CBM. Uses relative files.
Handles 1 related file; 16 prime keys; 250 fields; 40 characters/field on the 64
and 80 on the CBM; 1,500 characters/record on the 64 and 252 on the CBM;
holds 2,000 small records on a 1541 and 4,000 full-size records on an 8250;
20 screens/record on 64 and 2 on the CBM; programmable in BASIC.
Works with **Easy Script** and **Super Script.**
Reviewers: David S. Brown, James K. Condon, Jim Strasma

This file manager has been popular on the CBM for 4 years, and is a GOOD package. For users who only need one file at a time, it is also a bargain, especially for 64 owners. **The Manager** uses standard relative files, with nearly every desirable convenience included: sorts, searches, reports, screen dumps, dumps to word processors, etc. It has Commodore-recommended screen formatting (to easily design file formats), plus some programmable arithmetic functions. Screen formatting and data entry is slightly different between versions, but still works smoothly. To conserve disk space, Display variables are recalculated each time the record appears. The manual for the 64 also claims it can have a 1500 character record! **The Manager**'s other key advantage is its user-accessible BASIC and machine language code for making custom changes. CMD encourages people to develop custom applications, but unfortunately, none of the SYS calls and parameters are documented. While testing the 64 version, James Condon tried to generate a report--and immediately hated **The Manager.** The only way he could get the program to print out records was to use Manipulate and Print in that order, which generated an unformated "dump." He first called the manual the worst collection of gibberish he'd ever encountered, but later praised the 40 pages of additional documentation sent him on the Report Generate function, adding **"The**

Manager is a very capable program indeed; fully documented, it might even be fun to use." Other lacks include any way to restructure a file of more than 20 fields, prevent duplicate records, or find newly-entered data without time-consuming key updates. Despite such minor troubles, your subscription records are now on the CBM version of **The Manager**, as are TPUG's 25,000 membership records. Highly recommended for large mail lists.

PRACTIFILE (formerly FLEX-FILE 2.1)
Database for **all models (VIC needs 24K)**, by Michael Riley. $55-110 diskette.
Webber Software, P.O. Box 9, Southeastern PA 19399 (215/822-7729) or
Computer Software Associates, 50 Teed Dr., Randolph MA 02368.
Requires CBM disk drive. CBM or ASCII printer optional. No stated warranty.
BASIC plus machine language. Protected by cassette port dongle. Uses random files.
Handles up to 79 characters in each of 20 fields, 254 characters per record,
about 550 full size records, and unlimited prime keys.
Works with **Pagemate, WordPro**
Reviewers: Herb Gross, James K. Condon, Jim Strasma

At first glance, **Practifile** is just another mostly-BASIC file manager. It lacks many desirable features and is not particularly fast, nor is it cheap anymore. Even so, **Flex-File** is an important data base, not only because of its great flexibility and durability, but also because of its availability on all models of Commodore computers. After all, it was the first reliable database sold for Commodore computers and among the very few to successfully use random files. The author chose them to provide fast access to information on any part of any Commodore disk drive. **Practifile** also allows you to alter the shape of its records, or even the program itself. Tips for adding your own routines to **Practifile** are included in the easy-to-follow spiral-bound manual. If you shorten the number of characters in each record (name) to less than 127, **Practifile** can hold up to 1000 names. The report writer is fairly-usable but not noticeably better than others. The same is true of the sorting and searching options. **Practifile** also allows ANY or ALL field(s) to be keys, not just one. It requires a lot of disk switching with a single drive and tends to lose data with two 1541 drives, but runs without a hitch on a dual disk drive; it can also be configured to run on hard disk. Perhaps the most important asset this program offers is Mr Riley's phone number. He always sounds sleepy but helpful, and has provided James Condon with several free updates to solve small printer-related problems. As the only data base that works, unchanged, on every Commodore machine, from the VIC to the 8096, **Practifile** is a valuable program. It is also, without a doubt, the best data manager available for the VIC. Many user groups use it for their important records. Though it isn't "state of the art", it is quite satisfactory and works well every time. Recommended, especially for VIC owners and those with several Commodore computer models.

SILICON OFFICE
Integrated system (relational data manager and word processor) for the **8096.** $999 diskette.
Bristol Software Factory, England, or AID, 5901 John Martin Dr., Minneapolis MN 55430
Requires 8050/8250 or 9090 disk drive. TNW-103 or 8010 modem and printer optional.
DOS-protected. Two year warranty.
Reviewer: Jim Strasma

Silicon Office combines the first Commodore database language, relational data files, a multi-column word processor, and remote control and communication via modem, in a single 54K machine-language program. Up to 6 (or 30 using hard disk) independently defined files may be defined and related in nearly any way, using both disk drives for data, plus any number of work disks. This allows several thousand records, or individual records of more than 1,500 characters, or combinations thereof on an 8050 disk, and more on a hard disk.

As a true database LANGUAGE, it includes the expected amenities. As a WORD PROCESSOR, it has true multi-column output, links 120-150 page documents, and can add in ANY data from

any current file. Text is continuously and RAPIDLY formatted as it will be printed, with horizontal scrolling. As a TERMINAL, it is capable of doing, on a remote **Silicon Office** system, nearly anything that could be done by a local operator of that system. However, the real power of the program is that all these powers are linked, and the printed and on-screen documentation good enough that you can use them. My main complaints are that the diskette cannot be copied, (though it comes with a backup), and that reports are slower than molasses flowing uphill. That eventually forced us to stop using it for the Midnite. Also, since the appearance of **Super Office, Silicon Office** is grossly overpriced.

SUPER OFFICE

Integrated system (relational data manager and word processor) for the **B-128** or **8096**,
by S. Tranmer and T. Cranstoun. $395 diskette.
Precision Software (USA), 1675 York Av., Suite 11D, New York, NY 10128 (212/490-1825).
Requires 8050 disk drive. CBM or ASCII printer optional.
30 day media warranty. Machine language. DOS protected; backup copy included.
Uses random files. Is programmable. Handles 15 related files, 1 prime key,
255 characters in each of 127 fields, 1,108 characters per record, number of
records limited to disk capacity, 4 screens per record.
Contains **Superbase, SuperScript II**, and **SuperSpell** (also sold separately for less).
Reviewer: Mark Rosen, Jayne Schiek, Ellen and Jim Strasma

The first integrated system we've tested since **Silicon Office** appears to be vastly better than its renowned competitor. **Super Office** combines the **Superbase** data manager, the **Super Script II** word processor and the **Super Spell** spelling checker--each among the very best available programs in their respective fields--in such a way that they use each others data automatically, giving **Super Office** a huge advantage over all competitors. As in **Silicon Office**, the word processor can pull in any data from any active file anywhere in a document, giving extreme flexibility and ease in planning report formats and bulk mailings--but much faster than in **Silicon Office.** Although the spelling checker is not available simultaneously with the data manager, it is loaded together with the word processor to check a finished document. The price of **Super Office** is far less than that of **Silicon Office**, and comes from a very reputable company. The only limitations that will likely trouble you are: one prime key (shared by all current programs offering multiple files), and its inability to work with alternate disk drives (due to DOS protection). A best-seller and universally praised. Highly recommmended.Highly recommended.

SUPERBASE relational data manager: **Superbase** is easily the most sophisticated data base currently available for the 64 and B-128, and among the very best for the CBM 8096 as well. It excells in handling and relating data from multiple files, and also includes a true database language that includes nearly all important BASIC commands. You can write your own programs as well as complete application systems that run without intervention, up to 4K long on the 64 and 8K on the 8096. Like the best competing programs, **Superbase** allows full-screen free-form formatting of data processors, and makes restructuring simpler than any other data manager we've tested. It has on-screen menus and numerous help screens. Later, you can add your own help screens and memos. The documentation is good but not great, and because of its sophistication, **Superbase** is one of the hardest data managers to use; however, once you've learned it, you'll love it. The 64 diskette costs $99, the 8096 and B-128 versions cost $195, and the 8032 version is $150.

SUPERSCRIPT I (8032) & II (8096/SuperPET) word processor: **Superscript I** is Jim Strasma's second choice word processor, because it holds the second largest text file (250 lines), it can easily read a program LISTed to disk, and it eliminates the garbage that **Paperclip** files display when loaded into **WordPro.** It is file- and command-compatible with **WordPro** and **PaperClip,** and able to load those of **Silicon Office** and **Wordcraft,** with notable new features. You can restart the word processor without losing your file; scroll up or down by whole pages; erase to the end of paragraph; set tabs to trigger numeric mode; have output to video in variable speeds; load and save files while print-spooling from disk; automatically scroll without holding a key down; and easily send commands to secondary

addresses. The most notable improvement is its manual--a 3-part book with tutorial, quick-reference, and reference guide. The quick reference is also on diskette, with permission to copy it. The 8096 version (**Superscript II**) adds a way to turn wordwrap on or off, and the Goto command is great for large text files. Printer selections include most CBM or ASCII printers, but not the TEC (Starwriter) or CBM 8300 (Diablo 630). You can't control two disk drives at once, as in **WordPro 4+**, nor can you easily restart output from the top of current page. When input width is greater than screen width, it gives no warning of the approaching right margin, leaving you unsure what character ended the prior line. Fortunately, hitting LEFT-ARROW takes you back for a quick look. Also, some error messages are just letters. Though a spare copy of the copy-protected diskette is available, I especially dislike being unable to add the program to my master utility diskette. It's an excellent $150 word processor.

EASY SCRIPT (64 and Plus 4) word processors: Sold directly by Commodore, **Easy Script** has the largest text capacity for the **64**--a stunning 764 lines. You can also chain files together in a continuous printout of unlimited length. **Easy Script** shines in another important way. The 40-column screen width on the 64 and Plus 4 is no limitation because the program only formats text when actually printed, to whatever width is selected. In those rare instances when you must work with a wider screen display, **Easy Script** allows horizontal scrolling across any desired page width (splitting words at the limits), either while creating text or just before printing it out. Like the **Superscript** version, **Easy Script** has many advantages. For instance, you can view the directory without losing your text or load it as part of a file, invert the case of a range of text, set ranges to a precise character, have up to 50 vertical tabs, change from video to printer output, and from continuous to non-continuous mode during output. The printing touches are slick: you can do shadow printing, red/black printing, boldface and underline, and set the printed line length independently. Naturally, all other features of a first-rate word processor are present, including fill files, block transfer, repeat and save, search and replace, headers and footers, full control over colors used, and speller (see below). However, it lacks the column adding, sorting and moving abilities of **Paperclip**, plus the large number of printers that will work with it. The most important drawback is its DOS protection scheme, which has probably caused numerous 1541 disk drives to go out of alignment.

SUPER SPELL (PET/CBM) or EASY SPELL (64) spelling checker: If you need a program to check your spelling, and are willing to take the time to use it, **Easy Spell** is a bargain at $25, and works well. It is also easy to use, and comes with a good manual. Its dictionary is a competent 30,000 words, expandable to 60,000 words. You have the choice of American or British spellings or both. You may also build up a dictionary entirely customized to your needs. When checking a document, the program shows and selects files from the directory, and even checks linked files, up to the limit of memory. (Be sure you have enough room left on your working diskette to hold a copy of the largest file checked.) After the file is checked, the program reports several useful statistics about the writing style reflected in the file. There is no distinction between upper and lower-case, spelling is only checked up to the 20th character of each word. The list can be printed if you like. For each word a key is pressed, either to move on, add it to a user dictionary or fix it. However, once added and merged, words cannot be removed, so have an expert check your spelling before a merge!) Though we would rather see the suspect words in context than in a list, the package is first-rate.

Electronic spreadsheets and statistics

SYNOPSIS

Electronic spreadsheets do budgeting and planning, in a column and row orientation. They emulate or improve upon the classic program, **Visicalc.** Statistical programs help you analyze a series of numbers into useful information, such as studying class test grades to see if the test was reliable and valid.

WHAT ELECTRONIC SPREADSHEETS AND STATISTICS PROGRAMS DO

Electronic spreadsheets, or Calc programs as they are also called, **are glorified multi-column sheets of paper, much like the ones accountants use. They do very little that could not be done with paper and a calculator.** They do however have one wonderful advantage over paper. On paper, the slightest change on an accountant's work sheet can mean changing hundreds of other numbers on the sheet, each one by hand. The process can literally take hours. **With a calc program,** such **a change takes only a few seconds to ripple across the entire sheet of figures.** This is because the calc program doesn't just record numbers; it records the formulas that determine numbers, and continuously displays the results. This encourages the user to try things out, to speculate "what if", and then see the results throughout a financial model as one variable or another is changed. As a result, calc programs have become known as planning aids.

Actually, they much more. Think of them as **visible databases,** able to do most things other data managers can, but far more easily. All the data is available at once; you need only to scroll the display in one direction or another and you will find the needed information. Thus, even if you aren't an accountant, you will find calc programs useful, especially if you have at least a bit of use for their powerful calculating ability.

Statistical programs take your numerical data, such as is entered in a spreadsheet, and test it with many formulas. They then convert the results into ratios, graphs and charts, to make the significance of raw information more clear.

WHAT TO LOOK FOR (CHARACTERISTICS)

The original calc, **Visicalc,** is still used on larger Commodore products, but has not been made available for the VIC and 64. At first, this might seem a loss, in that it has been a best-seller. However, it is no longer at the head of the class in features. **Today, Visicalc sets the basic standard for a calc program, but newer programs better it in most ways and sell for less.**

When looking at calc programs, most **share the following features: ability to move rows and columns of information, ability to recalculate formulas automatically or manually, and ability to "cursor" around through the entire spreadsheet. Spreadsheet capacity is measured in "cells."** A cell is a location marked by a row and column coordinates; multiplying the number of rows and columns gives you the number of positions available for use. When it comes to cell space, more is better, but if you plan truly huge spreadsheets, you'd do better with **Lotus 1,2,3** on an IBM-PC computer. Nothing east up 64K of RAM faster than a spreadsheet.

When looking at statistical programs, they should be able to calculate univariates (mean, standard deviation, etc.) correlation plots, variances, and such. The really good programs will also be able to handle multivariates and create graphs and charts. However, if statistics are very important to you, you may need a larger computer. The best such programs run only on IBM-PC and larger computers.

CALC NOW.
Spreadsheet program for the **64**, by Randy Ubillos. $40 diskette.
Cardco, 300 S. Topeka, Wichita KS 67202 (316/267-6525).
Requires 1541 disk drive. Printer optional.
DOS Protected. Lifetime free replacement warranty. Maximum size: 1,500 cells
Reviewer: Jim Strasma

Although **Calc Now** is brand new, and we haven't fully tested it (hampered in part by a very sketchy preliminary manual), it appears to have most of the good features of **Calc Result:Advanced**, and none of its tendencies to fail. Even such direct abuse as telling **Calc Now** to read the directory off disk device 1, and printing to device 2 with no serial interface caused no problems, even though neither the cassette nor the RS232 port seems to be supported. Except for only being able to work with 2 dimensions instead of **Calc Result: Advanced**'s three, **Calc Now** includes all the spreadsheet features we look for, including individually variable column widths, printable formulas, protected cells, output to word processor (Cardco's **Write Now**), if-then-else, auto and manual recalculation, logical operators, and all the usual features of the original **Visicalc.** Its 39K free for data is enough for 1,500 simple cells, and even fully loaded, it recalculates fairly quickly. **Calc Now** also supports unusual printers with a choice of device and secondary address numbers, plus the ability to precede printouts with a string of printer control characters. Similarly, multiple CBM disk drives are supported. **Calc Now**'s new GET and FIND functions approach the power of a CASE statement and are almost unique, as is its ability to sort data. However, the best new feature of all is the context-sensitive Help function; to see what a key does in **Calc Now**, simply press F7 followed by the key in question, and a screen of info on how it is used will appear. From the command set, **Calc Now** may eventually include keyboard templates like those of **Write Now**, and then be among the easiest of all spreadsheets to use. Until then, the one help feature we constantly need is an alphabetical index of functions. It looks like this new spreadsheet may become king of the hill, and looks like Cardco has another winner. Unless you need the multiple pages of **Calc Result:Advanced**, or the cartridge ease of **(Easy) Calc Result**, you should definitely consider using **Calc Now** for all your spreadsheet needs. Recommended.

(EASY) CALC RESULT
Electronic spreadsheet for the **64, CBM, B-128** or **Plus 4,**
by Handic Software, 520 Fellowship Rd., Mt. Laurel NJ 08054 (609/663-0660).
(Easy) Calc Result version: $80 cartridge for the **64.**
Commodore, 1200 Wilson Dr., West Chester PA 19380 (800/662-2444)
Requires CBM disk drive. Datasette and 1525 or 1526 printer optional.
Disclaimer of warranty. Written in machine-language. CBM version ROM protected.
Maximum size: 1,000 cells (Easy version); 2,000 cells (Advanced version)
Reviewer: Jim Strasma, Jim Tucker, Larry Woolard

Like many spreadsheet programs, **(Easy) Calc Result** adds new and powerful features to those of the original **Visicalc** program. The first features you'll notice are the automatic protection against accidentally erasing formulas, and the ability to copy a picture of the screen to a printer at the press of a key; these make **(Easy) Calc Result** fairly easy for untrained users to handle. Because the colorful manual lacks a list of commands and an index, it is hard to use when most needed. Skilled users will appreciate **(Easy) Calc Result**'s IF-THEN-ELSE decision-making ability. It can hold up to 1,000 cells of information at one time and is contained completely on cartridge. It needs a diskette or cassette only to store worksheets. The only weakness we notice daily is the inability to set a protected horizontal title. **Calc Result** is also available in advanced disk versions for the CBM 8096 and for the 64 from Handic Software at a cost of $140. Unfortunately, the advanced version for the 64 has proven unreliable. Still, it adds the following features: a choice of 8 foreign languages, a "help" screen, double the cell capacity, as well as 3-dimensional spreadsheets of up to 32 "pages," looking at up to four at once. You can even merge data from several pages into one page.

NUMBER CRUNCHER STATISTICAL SYSTEM

Statistical package for the **64**. $53 ppd. diskette or cassette.
Dr. Jerry L. Hintze, 865 East 400 North, Kaysville UT 84037 (801/546-0445).
Printer optional.
Reviewer: Michael B. Maron

This set of menu-driven programs allows the user to construct a data base (containing up to 3000 items) and to perform up to 15 different mathematical transformations and statistical comparisons of data. It is easy to input and edit data. You can label variables, handle missing data, and save to diskette or cassette. Statistical procedures include univariate (mean, standard deviation, etc.) statistics, correlation and regression, multiple regression, t-tests, one-way analysis of variance, scatter plots, frequency tables and histograms, chi-square analysis, and others. The results are displayed to the screen, with optional printout for a permanent record. Dr. Hintze has done a masterful job in creating a friendly, trouble-free and useful program to researchers in many fields. An excellent tutorial-style manual is included; you seldom needed to refer to it, because the prompts are very easily followed. It also includes a sample data base. Dr. Hintze quickly answers user questions by either mail or phone. Highly recommended!

PRACTICALC

Spreadsheet for the **64** or **VIC+16K**, by Sandy Ruby of Computer Software Assoc.
$55 cassette or diskette (64). $40 cassette or diskette (VIC).
Computer Software Associates, 50 Teed Dr., Randolph MA 02368 (617/961-5700) or
Micro Software Intl., Inc., The Silk Mill, 44 Oak St., Newton Upper Falls MA 02164
Requires Datasette or 1541 disk drive. VIC requires 16K added memory.
90 day replacement warranty. Written in machine-language. DOS protected.
Maximum size: 100 columns and 250 rows (900 cell capacity).
Reviewer: Jim Strasma

Practicalc does almost everything the original **Visicalc** did, at a very reasonable price, in a more refined way. Its screen display is clearer and easier to understand, it allows the first column to be wider than others (for titles), and it only does math on request (saving time when designing a form). **Practicalc** also adds several excellent new features, like sorting, searching and prompting. Perhaps best of all, if an untrained operator will be using a form you design, you can leave messages for them where they need to type something. When they use the form, pressing a single key leads them through all steps they need to do to get an answer. One other great feature is the ability to print out spreadsheet formulas, for designing similar forms later. Anyone familiar with **Visicalc** will find **Practicalc** easy to learn. You select the maximum rows and columns you want, up to 100 columns or 250 rows (200 on the VIC 20.) Though the two multiplied together supposedly cannot exceed 2,000 cells, you can only fill about 900. All the needed information for easy learning and later reference is included in a well-done, compact spiral-bound manual. One pleasant feature missing from **Practicalc** is the ability to build formulas by moving the cursor. Another weakness is that recalculation is column-wise only. Most troublesome of all is that numbers on the screen are truncated, not rounded, when too large to fit on screen. The Commodore 64 version lacks the **Visicalc** ability to show windows, while the VIC version lacks a wider first column, and adds a way to protect cells against unintended erasure.

SYNOPSIS

These programs turn the computer into an electronic typewriter. The category includes text editors (simpler programs that use line numbers in front of each line of typing), true word processors, and programs that check spelling (sometimes even grammar). Each works with a printer and interface to produce "hardcopy" (letter or manuscript).

WHAT WORD PROCESSORS DO

One very popular use of home computers is as **an electronic typewriter.** The various uses range from scribbled electronic greetings on a diskette of programs mailed to a friend to the equivalent of a $15,000 dedicated word processor system in large offices. Just as makers of dot matrix printers might wistfully call their equipment "letter-quality," authors of note-scribbling programs occasionally call them "word processors." **The proper term for most text-processing programs is "text editor." Only those that challenge the features of an IBM "Displaywriter" honestly earn the name word processor. At present, a handful of programs for Commodore computers can claim that name,** and are reviewed here.

Even with top-notch word processing programs available, there is still a place for **simpler text editors,** because they can be extremely **simple to use and immediately available** the moment you turn on your computer. Wordcraft 20 and Write Now! are examples from this category. Still **another type** of text editor is written partly in BASIC, so it **can be modified to meet special needs,** such as an unusual printer. A serious writer will often need several text editing programs, each serving a different need. Fortunately, even the most costly of these programs is now quite cheap.

WHAT TO LOOK FOR (CHARACTERISTICS)

The **most important features** to look for in a text editor are: **full cursor control,** using keys the same way Commodore computers do in other programs; **quick response** that doesn't let the cursor fall behind when typing; **enough capacity** to hold as much text in memory as you need to handle at once; the ability to **move or delete any portion of text anywhere** within a document (Block move); and **extensive formatting ability** (making the text print any way you want); and a way to **see the final formatted result without a printer** (Video output). Two other abilities are nearly essential **for serious users:** a way to **merge files** into customized bulk mailings, and a way to **overcome the limited 22 and 40 column screens** on the VIC and PET/64/Plus 4. A **spelling checker would also be very helpful,** though the slowness of current Commodore disk drives makes them all but useless. (The new 1571 fast disk drive may help that.) **Full control of the disk or cassette** is also essential, as is a way to **link several files** into a single document, the ability to **replace one word with another** (Search and replace), and a way to handle **unusual character sets** (such as foreign language accents and graphics).

No word processor or text editor can be evaluated without **considering the printers** it will work with. Pay special attention to which programs work with your printer. If a particular advertised feature doesn't work properly for you, it may be a lack of **communication between the word processor, your printer, or the printer interface.** Unless otherwise stated, all programs reviewed here work with Commodore printers interfaced via the serial bus. Most also work fairly well with ASCII printers interfaced to the same port. However, only printers specifically named in the program will perform the fanciest formatting commands, such as striking each letter twice to make it darker (Boldface).

EASY SCRIPT (64/Plus 4) or SUPERSCRIPT I (8032) & II (8096/SuperPET)

Word processor for the **8032, 8096, SuperPET, 64** or **Plus 4,**
by Simon Tranmer of Precision Software. Diskette.
64/Plus 4 version: $50 from Commodore; CBM/PET/SuperPET versions: $150 from Precision.
See under the Data Manager review of **Super Office.**

PAPERCLIP
Full world processor for the **CBM 8032/8096/PET/SuperPET** or **64**, by Steven Douglas.
64 versions: version D ($80) or PaperClip 64 with Spellpack ($100 diskette).
CBM/PET/SuperPET versions: Regular and Expanded PaperClip ($125 diskette).
Batteries Included, 71 McCaul St., Toronto ONT M5T 2X1 Canada (416/596-1405)
Requires CBM disk drive. CBM or ASCII printer, 80 column board optional.
One year limited warranty. Updates cost $15-25. Written in machine language.
64 version protected by dongle in joyport 1; CBM version uses 2K ROM @ $A000.
One text file holds 429 lines. Uses serial bus or RS232 port.
Supports nearly all printers (separate printer set-up manual).
Uses serial bus or parallel user port interface.
Compatible with **WordPro, Easy Script** (sequential files only)
Reviewers: Barry Bransky, John Easton, Alan Dare, J. Paton Dellow, Ross Garber, Jim Strasma, Gordon Watson

At a trade show Jim Butterfield and Jim Strasma agreed that for their personal needs, text capacity is the most important feature in a word processor. For that reason, both use **Expanded Paperclip** (on the SuperPET and CBM 8096), because it allows up to 900 lines in the text buffer--enough for a long article. **Paperclip** has most things a person could want in a word processor, and is absolutely the most versatile word processor for Commodore computers. It is almost completely compatible with **WordPro** in file and format commands. It scrolls horizontally on text entry up to 250 columns, and can "print" to the screen. Unlike all other word processors tested, it manipulates columns as easily as rows (like a spreadsheet), and moves numeric tabs to print properly on paper despite embedded formatting characters. It adds and subtracts rows and columns and sorts/subsorts them alphabetically. The manual is good, but could use a quick index and needs a larger spiral binding. A separate Printer Set-up File manual supports the myriad of printers on the market, and complements the printer files on the diskette. You can even create your own printer file.

Like **Superscript, Paperclip** loads and saves sequential files, and can even store files on cassette. It also reads disk directories without losing current work, but can't load them into memory or print them easily. It sets ranges right to the letter rather than the nearest line, and can change easily from screen to printer output and back. Unlike **Word Pro,** hitting the RETURN key in the middle of a line during insert mode creates a new paragraph without losing the rest of the line. Unlike **Easy Script** and **Superscript,** it gives a 10 character warning of an approaching right margin when scrolling horizontally, and spells out error messages. Users may copy the program onto any number of data diskettes. Beginners will like the instant startup, and immediate re-set anytime within **PaperClip,** allowing you to control several disk drives and printers. Highly recommended for those needing the best.

The **64 version** can do everything the PET/CBM version can do, and in some ways better. Border, background and character colors can be changed with the function keys (very useful if you're using a TV as a monitor). The most noticeable new feature is the ability to view the screen in 80 columns, so you can see how the document will look on paper (margins, justification, etc.). It is now shipped as two programs on one diskette: one is the normal 40 column program; the other supports two 80 column boards. **PaperClip 64** also supports an all-software 80-column output mode that is hard to read but helpful because it shows where text will go.

The **CBM version** of **PaperClip** offers all the features of **WordPro,** but doesn't require 80 columns or a disk drive. It is easier to understand, offering readable screen instructions and cues when making errors or processing commands. All it needs is a bigger text area (115 lines). It's also great for formatted output to a wide printer--now you can line up the columns on the screen! This version has no vertical tabs or scrolling by screens, nor a variable speed video output, Print spooling, shadow and red/black printing, and secondary addresses, though italics are included. Neither restarts from the top of page easily. It also has a few small "glitches" not found in the 64 version. To review **PaperClip** for the 8032, J. Paton Dellow had two secretaries type in a 44 page manuscript on cassette. When Dellow attached a disk drive, the secretaries were totally agog at Global

search and replace, Appending whole pages to existing files, and completely rearranging three sections of the book.

Expanded PaperClip for the CBM 8096 or SuperPET is a word processor with enough internal capacity to handle even a large document at once! If you can't finish your article or sermon in 716 80-column lines, then it's too long to sit through anyway! **Expanded PaperClip** is what **WordPro 5+** could and should have been. The expanded version has the options described above, plus a way to start a printout from any page automatically, or restart from the top of the current page. Header and footer margins and pitches are now set independently of each other and the main text, and the maximum line width is 250 instead of 126. Files saved with one line length can now be safely reloaded into a different line length. Highly recommended.

SPEED SCRIPT 3.0
Text editor for the **64** or **VIC.** $3 printed listing.
Compute! magazine, March and April 1985, Greensboro NC.
Requires disk drive or Datasette. Printer optional. Unprotected. No warranty.
Works with **Easy Script, Paperclip, WordPro 64.** One text file holds 715 40-column lines.
Reviewer: Jim Strasma

Although it has been available for less than a year, **Speedscript** was ranked second in a recent Consumer Reports survey of Commodore word processors, and has won near-universal acclaim among user groups. It is readily available from any library that subscribes to Compute!, or as a back issue. If you don't have other access to a working copy on diskette, that can also be ordered from Compute! at a higher price. **Speedscript** is a fairly simple and easily usable word processor, whose best-known feature is word-wrap. That is, words do not extend from one line to another on the screen. It also has a good variety of formatting commands, adequate for most home uses, and provides a way to manually send commands to most any printer, although it does not generate any special printer commands automatically. Although the latest articles about **Speedscript** in Compute! are tough sledding for beginners, the articles include some very helpful quick reference pages. With help from a knowledgeable friend, the program can be operated from these alone. Although it is no match for the other word processors in this issue when it comes to raw power, for daily use, **Speed Script 3.0** may be all the word processor you really need.

WORDPRO 64
Word processor for the **64,** by Steve Punter. $50 diskette.
Pro-Line Software, 755 The Queensway East, Mississauga ONT Canada L4Y 4C5
Supports CBM and popular ASCII printers. Works with **Easy Script, Paperclip, WordPro 3+/64.** One text file holds 386 40-column lines.
Reviewer: Jim Strasma

If you know how to use **WordPro** and **WordPro 3+/64,** you'll find it easy to switch to **WordPro 64.** (The program was also temporarily called WP64 and The Word Processor during some litigation.) Most of the common commands and format options work the same way on all versions. However, **WordPro 64** is both better and cheaper than **WordPro 3+/64.** If you have a 1541 disk drive, the first thing you'll notice is that the DOS protection doesn't thump your disk. Once the program is loaded, you only have to answer one question, instead of the previous four. And instead of being limited to a very few printers, **Word Pro 64** uses printer files like **PaperClip,** allowing it to match new models as they appear. The review copy supports about a dozen printers. It can also handle two disk units (singles or duals) at once, as units 8 and 9. The new features you'll be hearing most about are the two-column output (no other 64 program can do it), true proportional spacing (on suitable printers), and an option that lets you print on both sides of fan-feed paper by doing all the odd pages first and then all the even ones after you turn over the paper. To make that option even more useful, an alternating margin offset can be selected, for binding or punching your printouts. One hint: don't panic if output suddenly goes to the disk

instead of the printer during two-column output. **WordPro 64** is just quietly writing a "leftside" file to disk before printing it on paper. Another new feature some will appreciate is word wrap, which keeps words from being broken up on two lines. Lack of this was a major reason Consumer Reports magazine disliked the earlier **WordPro.** Even better is **WordPro 64**'s ability to load sequential files, with your choice of paragraph delimiters. Though **WordPro 64** can't use an 80 column adapter, it does have both horizontal scrolling and a special block mode which shows the general appearance of video outputs up to 160 columns wide. At the moment, the weakest part of the package is still the manual. It's good to see Steve Punter trying again. **WordPro 64**'s two-column output, word wrap, proportional spacing and low price may send competitors back to the drawing boards.

WRITE NOW!

Machine-language word processor for the **64** or **VIC+8K.**, by Computer Applications.
$40 (VIC) or $50 (64) cartridge.
Cardco, 300 S. Topeka, Wichita KS 67202 (316/267-6525).
Requires Datasette or CBM disk drive. Joystick, CBM or ASCII printer optional.
Full warranty. VIC text file holds up to 28,159 characters.
Uses Serial bus or User port interfaces. Compatible with **Mail Now** and **Calc Now.**
Reviewers: B.A. Spencer, Jim Strasma

Write Now! is amazingly good. It is the only word processing program we've seen for Commodore equipment that's simple enough to use well after one hour--without a manual. It is also the most powerful word processor available for the VIC, and the least expensive! It's my number two recommendation for 64 word processing, and preferable even to **PaperClip** for those with limited skills or needs. It includes all the usual **WordPro** features and reads **Wordpro** files, but is far easier to use than most of its competitors. Part of **Write Now!**'s ease of use stems from its two stick-on job aids that fasten to the edge of the keyboard, and the simple keystrokes that activate each option. To move the cursor, you can use either the normal Commodore editing keys or the joystick.

One very obvious sign of the program's power is that Cardco used it to write its own 114 page manual, a beautifully clear document users will enjoy reading for its many helpful hints. In addition to most of the features of a good word processor, **Write Now!** includes such advanced features as HELP screens, a cut and paste buffer (with a way to "undo" what you did), a search and replace feature that allows you to confirm each change before it is made permanent, the ability to mix graphic designs with text, and a control file that lets you print out a 50 page document all at once with a single command. Its form letter-writing abilities are the best of any Commodore word processor. Formatting includes almost everything offered by more expensive competitors, and some they don't, such as page numbers in Roman numerals, proper handling of footnotes, and the ability to send escape sequences of any length to any printer without interfering with justified margins. Only microjustification is missing (though regular justification by adding spaces between words is included. The user can select from the normal 64 background and border colors. Like its best competitors, **Write Now!** includes a software 80-column display only on output. It is quite happy with a cassette, and works with several linking programs, such as **Mail Now** for mass mailings and **Calc Now** for spreadsheet calculations. Unfortunately, the files it reads need to be specially organized. This, plus the lack of column and sorting abilities, and hardware 80 column compatibility will lead many serious users back to **Paperclip.** On the other hand, **Write Now** is flexible enough to handle most printers that can be connected via the serial bus and can read **PaperClip** files. Overall, **Write Now** is a real bargain--the single most useful program we have seen for an unexpanded VIC. Unless you prefer the continuous text formatting offered by a few competitors, or need it to work with a 40 or 80 column board, give it first consideration. The 64 version is also attractive to 64 owners interested in a cartridge word processor. Recommended.

SYNOPSIS

These programs teach at home or at church, and are aimed for the age or grade levels indicated. The only programs used exclusively for school are teacher's testing and grade calculations.

WHAT EDUCATION PROGRAMS DO

Most educational programs still offer only boring sessions of drill and practice. One reason is that until recently, even good educational programs sold no better than bad ones. Another reason is that so few educational programs have been independently reviewed. A typical advertisement lists over 100 programs, with no guide to their uses, grade levels, or advantages over another company's programs. Things are changing. Companies like Spinnaker, Sunburst Communications and Mindscape are now enthusiastically selling educational programs, because deep down, people DO want their computers to be useful. When people find one education program to be colorful, interesting, well-documented and educationally sound, they are likely to buy more. Meanwhile, we have only a few gold nuggets in a sea of mud.

WHAT TO LOOK FOR (CHARACTERISTICS

Here are some characteristics to look for in a good educational program: **clear instructions** built into the program where they can't be lost, **quick game-like actions**, full use of **color, sound and graphics** and wide variation in displays and chores (to hold your attention), **consistent commands** (the same key has the same effect in all programs), **extensive error-trapping** (disabling dangerous keys and giving proper responses to faulty inputs), and overall, **a positive affirming attitude** (avoid games that make fun of you after a mistake). A program can reward learning with impressive displays or desired game, but it's even better for the learning itself to be interesting and game-like.

Since using a computer still relies upon reading level, educational programs are rated by the following categories:

Non-readers covers ages 2-5, in pre-primary.
Beginning readers covers ages 6-8, in grades 1-3.
Intermediate readers covers ages 9-12, in grades 4-8.
Adult readers covers ages 14-adult, high school+.

COMPUTER-ASSISTED INSTRUCTION AND TEACHER PROGRAMS

ALF IN THE COLOR CAVES

Dodging game for ages 3-6 for the **64**, by Joyce Hakansson et al. $35 cartridge.
Spinnaker, 215 First St., Cambridge MA 02142.
Requires joystick. 30 day free replacement warranty.
Reviewer: Jim Strasma

Alf is a pleasant, simple game that young children will enjoy. In it you direct a happy Q*bert-like critter through a series of tunnels from an upper cave to a lower one. On arrival, he dances to the cute tune that plays throughout. Complicating matters just enough are occasional angry eye critters that block Alf's path. Avoiding them teaches planning, timing, and other good things. There is a pause option, and the screen will blank to protect the TV if your child runs off and forgets Alf. Although the baddies look mean, the worst they can do is bounce Alf back to the top tunnel and make him try again. No nightmares from playing this one. And when you tire of the game, try the activities listed in the manual; guaranteed to mess up the kitchen, but also likely to teach good things about color. Highly recommended.

ALPHABET ZOO

Letter recognition game for ages 3-8 for the **64**, by Disharoon & Groetzinger.
$35 cartridge.
Spinnaker, 215 First St., Cambridge MA 02142
Requires joystick. Written in machine-language. For 1-2 players.
Reviewer: Jim Strasma

In the Letter Game, one or two kids race through a maze to capture the first letter of the picture shown in the middle of the screen. Do this by moving your character over that letter in the maze and then pressing the fire button, until you either catch all of that letter in the maze, or time runs out. To speed your moves around the maze, there are hyperspace circles in the corners of the maze that randomly move you somewhere in the maze. In the Spelling Game, the goal is to pick up all the letters that spell the word pictured in the middle of the screen, in the correct order to spell it properly. The goal in both games is to teach letter recognition and spelling. There are 6 levels of play, ranging from using only the easiest consonants to using the entire alphabet in game one, and from 2 letter words to 9 letter words in game two. Game one can be displayed in either upper or lower or mixed case; game two uses lower-case. Recommended.

ANIMAL CRACKERS

Animated drills for ages 3-8 for the **64**, by Playground Software. Diskette.
Futurehouse, 310 W. Franklin St., Chapel Hill NC 27514.
Requires 1541 disk drive, Edumate light pen or Koala touch pad, and TV/monitor + sound.
Unprotected. 30 day free replacement warranty.
Reviewer: Jim Strasma

Despite its being mostly a drill, **Animal Crackers** is my favorite Playground Software program. I couldn't find anything wrong with it and found much to appreciate. Like **Little Red Riding Hood**, it uses a voice synthesized Frog to give nearly all instructions, and all selections are easily made by light pen. Tose selections allow enough slop that the precision of the pen won't be a problem. The program offers six activities that cover most Kindergarten topics, including matching shapes, matching colors, associating a letter with an object whose name includes it, identifying numbers, matching objects to words, and a make a picture option that is like a paint pogram, except that you don't actually draw the shapes (which are sprites). Any of the activities can be played on any of 8 low resolution color backgrounds, using 26 alphabetic animals as props. Incorrect answers bring an "Oh oh. Try again" until it's done right--no escape. But nothing here is so hard that a child couldn't do it properly within a few minutes. The combinations of a wide variety of activities and locales, with plentiful color, voice, and easy light pen control makes this an outstanding product. Highly recommended for preschoolers interested in reading.

ARITHMAGIC

3 math programs for the **64**, by Joanne Benton. $35 diskette.
Q.E.D., 29924 NE Stanton St., Box 12486, Portland OR 97212 (503/287-8137).
Unprotected. 14 day free replacement warranty.
Reviewer: Jim Strasma

This package of challenging math teaching programs includes 3 parts: Diffy, Tripuz, and Magic Squares. All are especially suited for gifted children, who find ordinary math drills too boring for words. For instance, to make a "Diffy", you give the computer 4 numbers, which it puts in a square. Then you go around the square giving the difference between each pair of numbers. Then the computer takes those numbers, and makes a new square. The object is to find numbers that let you keep going as long as possible. (If you succeed, you'll also have had a lot of practice subtracting big numbers!) The only problem in Diffy (for grades 2-6) is that the winner's screen includes both graphic and text mode characters, and isn't look quite right in either mode. In Tripuz (for grades 3-6), you are given a choice of working with addition or multiplication. Either way, you

are shown a triangle with empty corners, and numbers between the corners that represent the sum or product of the unknown numbers in the corners. Your goal is to identify the missing numbers--welcome to Algebra one! If you miss a guess, a hint is offered, telling you whether a larger or smaller number is needed. Thus, even a student who guesses wildly will learn how to split a difference. Magic Squares (for grades 5-9) offers you a chance to recognize fairly complex relationships between numbers in a 3 X 3 square matrix (magic squares patterns). For instance, the sum of the 3 in any direction is triple the middle number, and the difference between the middle numbers of 2 adjacent sides added to the smaller of the two is the value of the opposite corner. Get the picture? Tough, but fun, because you are led through it step by step, with hints on things to notice whenever needed. All 3 games have original enough concepts to really hold students' attention, beyond simple drill and practice. Our son pronounces them "pretty good." They seem to be as good a set of math programs as is currently available. The only weakness is lack of color--the standard blue on blue is always hard to read. Highly recommended.

CAVE OF THE WORD WIZARD
Vocal spelling program for grades 1-12 for the **64.** Diskette.
Timeworks, Inc., 405 Lake Cook Rd., Deerfield IL 60015. Unprotected.
Reviewer: Kendall Green

This is a high resolution graphics spelling program with synthesized voice. The voice synthesizer requires no additional hardware and is reasonably accurate when using a monitor with audio or a good TV. The program contains 500 words ranging in difficulty from "dog" to "pterodactyl" arranged in 10 lists, with more words in the easier lists. The program allows the player to choose a boy or girl character and one of 4 levels of difficulty. The character must find 4 crystals hidden in a 10 level cave, jump over rocks, spiders, snakes, etc., and made it back to the top to get out of the cave. During the journey a wizard appears demanding the character spell a "spoken" word. If the correct spelling is typed in, the player is rewarded with more power for the flashlight or more bandages. If the spelling is wrong, then power is taken from the flashlight. The wizard reinforces correct spelling and encourages practice on those missed. The game ends when the player runs out of flashlight power, uses up all the bandages, or recovers the 4 crystals and exits the cave. In summary, this is an excellent graphics and sound program for spelling drill.

DUCKS AHOY
Pareschool counting game for ages 3-8 for the **64.** $30 diskette.
CBS Software, 41 Madison Av., New York NY 10010.
Requires joystick.
Reviewer: Rebecca Boren

Children keep the ducks afloat and avoid the boat-dunking hippos. They practice counting skills and predicting outcomes, and are encouraged to think logically. The program has excellent grphics and music. Since it requires a joystick, it would be more appropriate for 5-8 year-olds, rather than the 3-6 years stated on the package. Highly recommended.

EARLY HEROES OF THE BIBLE
Bible lesson/quiz for 1 player for the **64,** by Gilbert & Ronald Beers et al.
Double-sided diskette.
Baker Book House, Grand Rapids MI.
Requires CBM disk. Joystick optional. No stated warranty.
Reviewer: Jim Strasma

Though nominally just another Bible drill, **Early Heroes of the Bible** is the most polished education program we've ever tested, thanks to a list of credits as long as those in a movie. In it you have a choice of 15 stories from Genesis 1-26 to read. The stories

appear in large characters that even a third grader can read, with even larger titles. Interspersed throughout are hi-res drawings that are professional in quality and fun to view. The user can page forward or backward through the story at will, then answer 6 questions from 3 levels of difficulty, via the joystick or a keystroke, from a list of choices. When a question is missed, the relevant part of the story is re-shown, with the clue highlighted and the answer above, giving double reinforcement. If 5 questions are answered correctly, the hi-res drawing becomes animated as a reward, apparently swapping several screens to give a good illusion of motion. There is ample warning of what is going on, such as a clock sprite which appears when you must wait. Part of a series of 4 Bible study programs, **Early Heroes of the Bible** has just raised the standard by which all commercial teaching programs will henceforth be judged. Highly recommended.

THE FACTORY

Factory simulation game for ages 7+ for the **64**, by Sunburst Communications. $50 diskette.
Sunburst Communications, 39 Washington Av., Pleasantville NY 10570 (800/431-1934).
6 month limited warranty. DOS-protected, no backup offered.
Reviewer: Elizabeth Kaspar, Jim Strasma

Another excellent 3-part program with 3 skill levels from Sunburst and most deserving of the 1983 Learning Software Award. In this simulation of a series of programmable machines, you program sequences of machine actions that will produce desired products. At first, these will be your own design; later you match those created by the computer, aiming for efficiency. The first program introduces the machines. In the second, the student designs an assembly line and predicts the final product. The third, and greatest delight is when you create an assembly line to make your product. This may take 3 machines in easy mode, up to as many as 8 in difficult mode. Spatial perception, logic, and inductive reasoning are just a few of the skills this clever program teaches. In addition to programming concepts, **Factory** illustrates angles, shapes and rotation. The program makes fairly good use of graphics, and has some appropriate sounds. Its manual is quite easy to read, and there are screen helps. The teacher's guide comes in a durable, plastic binder with both a master and a backup diskette. However, the program's action seems far too slow--unlikely to hold the interest of most children for very long. Still, the concept is quite nice: set a series of machines to match a pre-programmed design (yours or someone else's.) Puzzling out the more difficult ones should keep a 7 year old busy for quite some time, and serve as good practice for spatial relation problems on IQ tests. If only it ran at a decent speed! Recommended for patient children, and for gifted classes, grades 2-8.

FLIGHT SIMULATOR II

Flying simulation for the **64**. $50 diskette.
SubLogic, 716 Edgebrook Dr., Champaign IL 61820.
Joystick optional.
Reviewers: Art Kimball, Al Kinker, Todd McDonald

Flight Simulator II is, without a doubt, the BEST flight simulator around. It is just like real life flying without taking the risk. However, getting airborne isn't that simple. This so-called game begins at Meigs Field in Chicago, and you can fly anywhere you wish. On takeoff, you can see Lake Michigan and the John Hancock Building. Make sure you know how to swim because you will crash into Lake Michigan a lot at first. This simulator has many different options. You can choose bad weather, night flying, a World War I battle game, or even make up your own option in edit mode. **Flight Simulator II** has great graphics and sound effects. It even gives minor changes in engine pitch during changes in altitude. You hear the engine roar, and pass over the ground with all roads, airports and buildings visible. The controls respond very realistically. The NAV/COM package is superb, all significant VOR stations can be tuned, ADF and DME equipment function perfectly, and even the transponder frequency can be changed! Every functional control in a Piper Archer II is there, and functions properly. It has a full 360° field of vision with a choice of 9

different windows from the cockpit, plus a "radar" view that "zooms" in and out to show your position from above. With the editor mode, you have complete control. When "Reality" mode is activated, you must even turn on your magnetos and start your engine, and if you leave your lights on too long, bulbs will burn out! If "Reliability" mode is altered, you have random problems. Chosen options can be saved to disk; however, the manual does NOT clarify that the diskette will be FORMATTED beforehand. Aside from that, the documentation is the best we've seen. **Flight Simulator II** lives up to its expectations. However, several very talented and quick-learning game players spend hours trying to fly this simulator without much success. Without basic flight skills or someone knowledgable to help, don't expect to master this. There is also an unrealistic statement which implies impending certification of this program so that a pilot can "log his time." Still, any pilot will be most pleased with this program. It's an invaluable aid for sharpening up navigation skills without having to rent an airplane!

THE GOSPEL OF MARK
Bible study programs for the **64.** $20 diskette ($35 for both Mark and Luke).
Rev. Daniel Shutters, Zion Lutheran Church, Box 5, Dauphin PA 17018.
Unprotected.
Reviewers: Jim Strasma, Larry Woolard

The first in a fine series of Bible study aids. **Mark** is not just drill and practice; if anything, it's a party game--an adventure type game based on a biblical theme. Our Christian friends who see it can't stop playing. Even Jamie (age 7) is determined to "become a Gospel author" by getting through the program without sinning. Shutters did it right--had a good idea first, then wrote the program. In **Mark**, you travel with Jesus and observe situations similar to or directly from the Gospel of Mark, and answer questions. There are a few surprises and the computer turns out to have quite a sense of humor. Were God's words at Jesus' baptism, "You are my son," "I told you not to get wet," or "Look out below?" Another question asks how you would respond if invited to eat out by two people, one a rich pastor and one a drug user. If you choose as the author feels Jesus would have, you also reminded, "You wound up with a bad reputation - but you're in good company!" Without a doubt, this is the most creative Christian education concept we've seen on any micro. Highly recommended for all who can read.

JUST IMAGINE
Kids' picture story designer for the **64.** $25 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Reviewer: Jeff Lowenthall, Jim Strasma
Requires 1541 disk. DOS-protected. No warranty.

By rights we should leave this out of this issue, since we were only able to review a prerelease version at a trade show last summer. However, it is out now, and is too good to neglect. In **Just Imagine**, your elementary age child writes and illustrates a story, using a wide variety of preset shapes and settings. It will also allow animation of one object, along with a music track! The combination is extremely effective. As a bonus, while the program does its behind the scenes work, you are presented with a simple quiz game to pass the time. Our then 8-year-old Jamie, who would normally rather do anything rather than write, even on a word processor, happily spent two hours with Just Imagine at the show, and designed a story that even astounded the Commodore booth staff. The idea is simple enough--while writing about Tarzan swinging through the trees, show a Tarzan figure swinging through the trees of a jungle background. The designs help the student think of something they consider worth writing about, and also ease the otherwise difficult task of converting the writing into suitable pictures. We consider it second only to **Sky Travel** in educational value, and highly recommend it.

KEYBOARD CADET
Typing tutorial for the **64**, by Camelot Software. diskette.
Mindscape, 3444 Dundee Rd., Northbrook IL 60062
Reviewer: Jim Strasma

Keyboard Cadet is a real good beginning program, presented in a fascinating way on the screen. Hands show the actual positions on the keyboard, while the program highlights the letters to hit. It's fun because you enter your own name and it talks to you. The lessons go from letters, letter combinations, diagraphs to words. It also teaches blends, diagraphs, diphthongs, punctuation, and shows the difference between capitals and lower case letters. There are several options: you choose from a variety of speeds, and between the Qwerty or Dvorak keyboard. You have space pictures forming all the time. When mothership comes, you type the whole keyboard to blow it up. Attractive score. Did not show percentage at end? The scorecard holds 100 cadets but only the five top point getters make it into the Hall of Fame.

KIDS ON KEYS
Typing trainer for ages 3-8 (non- and beginning readers) for the **64**,
by Frieda Lekkerkerker. $35 cartridge.
Spinnaker, 215 First St., Cambridge MA 02142
30 day limited warranty. Machine-language.
Reviewers: Jim Strasma, Rich Westerman

Kids On Keys is Spinnaker's typing game for children, ages 3 to 9. It does not attempt to teach proper typing habits. Rather, it aims for keyboard familiarization using three games. The first shows letters and numbers floating down the screen, followed by a balloon with a word in it. The child is to find the matching keys and then type them, before the images disappear. In game two, the child types the word that correctly identifies colored pictures moving down the screen. Then, in a bonus round, they attempt to identify PARTs of the same pictures. In game three, only words appear, in full color. Also on screen are fifteen pictures, one of which matches the word. As the word appears, the child is to type the number of the picture that matches it. All of the games are accompanied by music, which unfortunately cannot be turned off for classroom use (except at the TV, of course). Once all are mastered, the child will be familiar with the keyboard, and also with numbers, letters and words. To make things more interesting for kids of various ages, there are four skill levels for each game. These vary the words used and the speed at which they travel over the screen. For advanced users, the program includes a "Make Pictures" option to create and name new objects and then SAVE them to disk, but Rich Westerman couldn't get the save portion to work. The program gives easy-to-understand prompts for the formatting of the data disk, and a joystick-driven drawing routine works fine. The program achieves its goals well, although $35 is too much to pay for a game to be used briefly by one child. The same money would buy one of the Texas Instruments "Speak and..." toys, which also teach keyboard familiarization. For larger families and classroom use, on the other hand, **Kids on Keys** is a good introduction to the computer.

KINDER KONCEPTS
Pre-school learning exercises (ages 3-8) for the **64** or **PET**, by Michael W. Horner.
$40/diskette ($175 for 6) for **64** and two diskettes for **PET**.
Midwest Software, Box 214, Farmington MI 48024.
Requires CBM disk drive. 3 reading + 3 math diskettes (total of 30 programs).
30 day free replacement warranty. Written in BASIC. Unprotected.
Reviewer: Jim Strasma

64 version: Kinder Koncepts is a delightful set of learning games that helps preschool children develop creativity, counting skills and reading readiness. Your child can choose from ten different activities, including Letter order, Twins, Different, Shape match, Pattern match, Number order, Bug counter, Begin to add (especially well done!),

Longest (very nice!), and Shortest (very nice!). The only words used are mostly in the standard beginning "menu", which lists each activity (A through J) in a different color. Your child can recognize different games by their color and position, and choose by pressing one letter. There's enough variety to keep even the most active child contented for half an hour. Each right answer is greeted with a big happy face, along the lines of "Facemaker, but wrong answers get an unsmiling face that looks more angry than sad. On the second try, the correct answers are always displayed before going on to another problem, and repeated later on. In each activity, the big shapes or numbers appear in large blocks, with the responses recorded and rewarded in a second separate block or area. The game uses lots of bright, nicely balanced primary and secondary colors. After several right answers, the computer flashes colors and briefly plays such single-note tunes as "Mary Had a Little Lamb," "Shoo Fly Shoo," "Look Away" and "It's Howdy Doody Time." (oh, for the old days...!) Most instructions are in single numbers or letters attached to pictures. Only the names of the activities are spelled out, each time in upper-lower case, with proper capitalization. You can break out of any individual activity and restart with RUN, but can't get back to the main menu until you finish the activity. **Kinder Koncepts** is easier to use and has better graphics than Spinnaker's **Kindercomp.** Highly recommended, for an education game!

PET version: This two diskette package (one for reading and one for math) for the PET is still without a doubt the best set of early learning games, covering everything from distinguishing a square from a triangle to division by two's. Except for not having color, the **PET** version is nearly as good as the **64** version. All but two of the activities work well on the 8032 as well. The only weakness I found in the program is that the sounds are not optional; this may limit its use in class. Otherwise, the program is the best collection of educational programs we've seen. Highly recommended.

MASTER GRADES

Grading program for the **64**, by James Cox & Michael Horner. $60 diskette.
Midwest Software, Box 214, Farmington MI 48024 (313/477-0897).
Requires 32K and disk drive.
Reviewer: Marilyn Achelpohl

This program is user friendly and provides educators with a useful grading procedure. It takes time to set up class lists, but weekly updating goes quickly. Six print options provide teachers with all the necessary lists for various grading procedures. It uses gradebook pages to enter the weekly grades, as numerical grade points. The progress reports are handy: a user can change the wording, the reports can produce both proficiency and deficiency letters, and they have signature line on deficiency notes for parents to sign and return. It has one drawback for small schools with several grade levels in one class: it automatically sorts all students in one alphabetical order, although it can still print out one grade level at a time. The user can set the grade scale, though **Master Grades** calls for plus and minus grades (rarely used in schools today). You must weight scores in numeric points according to importance, because the program averages all test scores together equally. Even with limited computer experience, most teachers could use this program for all grading procedures.

M-SS-NG L-NKS

Reading comprehension program for 1-2 players, grade 3+, for the **64**,
by C. Chomsky and J. Schwartz. Diskette+backup.
Sunburst Communications, 39 Washington Av., Pleasantville NY 10570 (800/431-1934).
Reviewer: Ellen Strasma

The goal of this language puzzle or game is to improve reading comprehension and spelling, extend your vocabulary, and study use of words through context, inference and author styles. To do this, you guess the author and title in each of a series of one-page passages that contain missing letters or words. You fill in the blanks in the passages using several techniques. You can read by association, guessing letters and words by their

context. With practice, you can guess letter patterns and what part of speech the next word should be; for instance, each word has to contain a vowel, usually the second or third letter, and each sentence normally contains a verb, usually following a noun. After filling in a few sentences, you might even be able to recognize the author's style, especially when full words are missing. The passages come from 3 different lists: children's classics, encyclopedia (non-fiction and informational), and adult classics. The 3 lists are based on the magic number "9": each list contains 9 passages in each of 9 books, with 9 levels of increasing difficulty (more missing letters and/or words). Although the program moves slowly and contains no help prompts, you can skip the initial directions if you want, stop in the middle of a passage, and even check your score any time (your score is the number of right and wrong guesses on each page and an overall score). The package can serve a wide range of abilities--not only the number of letters or words omitted, but also the selections used (from children's classics like Little House on the Prairie to adult classics like For Whom the Bell Tolls). The program could best be used by individual students or in small groups to discover and identify the important classics. It's great for reading in context and for remedial reading.

PIPES

Plumbing simulation game for intermediate readers for the **64** or **VIC.** $35 cartridge.
Creative Software, Box 4030, 201 San Antonio Circle, Mountain View CA 94040
Requires joystick. 30 day limited warranty. Written in BASIC.
Reviewer: Jim Strasma

Students will like this plumbing simulation. **Pipes** realistically shows the problems involved in connecting homes to a community water supply. A variety of pipes are used, each available in a limited supply at a fixed cost. Play involves using a joystick to send a plumber figure to the store. There, the user guides him in selecting the next pipe needed. Pipe in hand, the plumber is moved to the point of need and the pipe added to the end of a line of other pipes. This is done repeatedly, until lines are completed from the community water supply in the center of the screen to all the homes around the edge of the screen. After all connections are made, the water is turned on, and the player is rated, both for the cost-effectiveness of the pipes chosen and for the accuracy of their placement. (Sloppy placement is reported as leaks.) The difficulty of the game is varied by selecting the number of houses to connect at once, from one to five. Connecting one house is a simple, but time-consuming chore for an adult; five takes real planning and even more time. (As too often in real life, once a pipe is purchased, it cannot be returned to the store.) The graphics in **Pipes** are just the usual Commodore characters, but colorful. A small radar-like screen window shows the overall layout of the houses, while the rest of the screen shows a closer view of the plumber's immediate surroundings. The sounds are numerous, varied and appropriate, but quickly become annoying. Fortunately, the game can easily be played with the sound off. Documentation is largely built into the program as on-screen instructions. I found them adequate. Although this isn't a game any one player is likely to use more than a few times, it will be a favorite in schools, as each child for years to come begs for a few more tries! Excellent simulation.

THE POND

Pattern recognition game for 1-2 players, grade 2+, for the **64.** $50 diskette + backup.
Sunburst Communications, 39 Washington Av., Pleasantville NY 10570 (800/431-1934).
Unprotected. Lifetime replacement warranty.
Reviewer: Jim Strasma

The Pond is an excellent educational program that teaches you to see patterns and describe them logically. The setting is a pond partially covered with lily pads in some pattern. You control a programmable frog who needs to cross the pond by hopping from pad to pad, changing direction when necessary. Your job is to recognize the pattern in the lily pads and program the frog to follow it. At the lowest level, this is easy to do. The

patterns are only 2 steps long, and can be seen in full from the start. Just tell the frog (via the keyboard) to go up 2 and over 3, for example. At higher levels, the task becomes more difficult. First, extraneous lily pads are added to camouflage the pattern, which can increase to up to four steps. Although pattern recognition has been one of my strongest skills, I barely succeeded at the top level, and then only by mapping the part of the pond I could see, and calculating carefully which patterns remained possible as each new piece came into view. Although you can normally see only about a quarter of the pond at one time, you can request to see the whole pond and even the pattern, for a heavy point penalty. Most of the time you have to manually hop your frog along the pads until you can recognize the pattern. Since you only get 33 hops to solve 3 problems, and can carry spare hops with you into the next level, there is a strong incentive to think rather than hop. If you miss the pattern, your frog will end up in the water and start over. If you succeed, a sonic celebration congratulates you as you move on to the next of 8 levels, ultimately reaching the frog's favorite toadstool. If you don't arrive the first day, you may also restart at any level on future days. **The Pond** comes with full written and on-screen instructions, and a warranty that even replaces lost instructions). Color, graphics and sprites are well used throughout, and the sounds are pleasant for home use, but cannot be turned off by the teacher as on the Apple version (the only negative I found in this program.) Overall, **The Pond** is excellent, ideally suited for both gifted education and regular classes. Enjoyable for adults as well as children. Highly recommended.

ROCKY'S BOOTS
Electronics simulation program for the **64.** $29 diskette.
The Learning Company (TLC). Protected.
Reviewer: Marshall Kragen

This is by far one of the best educational programs from TLC. Those initials also stand for Tender Loving Care and this is exactly what this program contains. The premise is to create electronic machines by wiring together various electric conductors anad circuits. These machines, for the most part electronic boots, will then carry out assigned tasks. The program takes you through a complete tutorial to patiently teach the methods by which all objects work. It starts out moving something with the joystick and moves up to the most complicated tasks, using Boolean logic to solve the problems. You are learning to think logically, as well as learn the entire core of computer manufacture and construction. The various switches involved are AND, NOT, and OR switches. First you invent machines to solve fairly simple game problems and then solve very hard ones, while an alligator frequently stalks you to chew you up piece by piece. Yet you can make a machine that will beat him, too. Finally, you can invent your own games and machines. This is the creation of what Seymour Papert, creator of lOGO, would call a microworld. The student is creating his own programming language, not unlike a very simple machine code, one to operate his own machines. Bugs are common as switches do not turn on other switches. A final creation may be admired and the learning that into it can be applied to other problems. There are problems with the program, but they should not deter anyone from buying it. It must be used with a color TV or monitor, since the games call for interacting with similar objects with different colors, which don't look a lot different in black and white. Also, you can only save one partiallly complete game at the a time, so you lose the chance to save on diskette your created creations. Your only solace is to hand draw what you have done for later re-entry. Also, you are wiring things together, and then cutting those wires apart. There is some fear a child may do this in real life, alhough the program clearly explains this danger, and tells you it can only be done in the play world of the computer. My son is not quite 8 but can follow the program as well or better than his old man.

SAT TEST

Achievement/general knowledge test tutorial for the **64.** 6 diskettes.
Mindscape, 3444 Dundee Rd., Northbrook IL 60062
Reviewer: Geneva Spencer, Jim Strasma

This test trainer arrived just as Jim Strasma needed to prepare to take the GRE (a grad school screening exam). Apart from working very smoothly and easily, the program did provide a very helpful review of high school algebra and geometry that he very frankly needed, plus a lot of practice in verbal and analytical skills. That practice effect is the real value of the program. After completing the 1200 problems on the 6 double-sided diskettes, you'll feel ready for anything, and the actual problems will seem almost familiar. You could get the same effect for less money by buying the practice guide offered by ETS (vendors of the GRE and SAT tests), but you wouldn't have as much fun, and wouldn't get as much step-by-step help. Learning mode is completely separate, but in the testing mode, you can still go over what you missed. One approach is to take the test, and then reinforce your skills in learning mode. The program can also be used for testing gifted children, because it covers so many skills and can pinpoint their specific weak areas. Not only does it test math and reading comprehension, but also teaches testing skills, like how to take a multiple choice exam. In test mode, it times you and prints out scorecards. **S.A.T.** begins at fourth grade level skills and easily carries you through skills needed for college study.

SEVEN CITIES OF GOLD

Spanish exploration game for ages 8-adult for the **64**, by Bill Bunten. Diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403.
DOS-protected.
Reviewers: John Gerecht, Clark Luikart, Jamie and Jim Strasma

Seven Cities breaks new ground and is a real departure from the standard arcade and graphic adventure games. It is based on the Spanish conquest of the new world. You're a Spanish explorer sailing west to North or South America with 4 ships, 100 men, a years supply of food and trade goods. When you reach the new world, you leave your ships and explore the unknown land with a combination of men/food/trade goods. The object is to find gold in native cities and gold mines (if you can find one) while exploring the continent. You also learn where the different kinds of tribes live. When you reach a city or village, you can attempt to trade with the natives or try to conquer them by force of arms. Both methods work, although trade seems to be preferable. When satisfied with the gold you have accumulated (or land you have discovered), you head back to Europe. If you're lucky you will be given an audience at the court (I haven't gotten in yet) and a title (Viceroy, etc.); and maybe a loan of more gold to further your explorations. You can then outfit another expedition and continue until you have have explored all of North and South America, and discovered all the rivers, natives, gold, and much more. One clue: the King won't give you any money if you kill off all the natives!" **Seven Cities** is the best combination of education and fun since E.A.'s "MULE". Clark Luikart's son is actually interested in history and geography because of **Seven Cities**--making the maps in the game beats any geography lessons I ever had in school. In his first 12 hours, John Gerecht discovered about 65% of the land, at the novice level. (There are 3 levels.) The game is a graphic/sound masterpiece, controlled with a single joystick. Because of the complexity of the game, the single button does a lot, but it becomes easy very quickly. The best part is that you have to think and reason. There are few games that offer a true alternative to pure violence, and **seven Cities of Gold** has more to offer than most.

SKY TRAVEL
Planetarium simulation for the **64**, by Frank Covitz. $20 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Requires 1541 disk drive. Commodore-compatible graphics printer optional.
DOS-protected (thumps). Disclaimer of warranty.
Reviewer: Jim Strasma

Sky Travel was a big hit at the Summer 1984 CES and TPUG's Fair, and is still, almost a year later, one of the best programs for the 64. In it your screen becomes the dome of a planetarium, able to show the appearance of the night-time sky anywhere on Earth at any time you choose. Care to watch the night sky in Bethlehem on December 25, 4 BC? No problem. Can't wait for the next appearance of Halley's comet? View it now, on your 64. Since a planetarium is a large, costly piece of complex equipment, it shouldn't surprise you that **Sky Travel** comes with a good sized instruction book that you will need to read. Nine year old Jamie was a budding master in less than an hour, complete with a printout of the constellations he wanted to run outside and see that night. There are enough options to satisfy anyone, including such niceties as viewing stars below the horizon, and finding built-in landmarks. Latitude and longitude are handled especially nicely (by moving a plane on a map via a joystick). That is ever so much easier than writing coordinates! **Sky Travel** is a must purchase for schools that teach Astronomy, and anyone else interested in the stars. Highly recommended.

SUCCESS WITH MATH SERIES
Arithmetic drills for 1 student, grades 1-4, for the **64**. $25 diskette.
CBS Software, 41 Madison Av., New York NY 10010 (212/481-6463).
Written in BASIC. Unprotected. 90 day media warranty.
Reviewer: Jim Strasma

ADDITION & SUBTRACTION: This is the first of 4 math packages, all drill programs at differing levels. Each is easy to use, works its problems in the proper order, and teaches needed techniques. The reward messages are brief and text only, but don't include noises that have to be turned off in a classroom situation. Students can vary the complexity of the addition and subtraction problems (up to 9 digit, 9 row addition problems and 5 digit subtraction problems--with or without borrowing). They can quit at any time and see a summary of their performance, but the record is not saved. If a mistake is made, a second try is suggested and the answer to the current step is shown, which the student must type in and continue to solve the problem--a good touch. The on-screen helps are entirely sufficient, but there is also a fine brief manual, whose best part is a list of the consumer's rights under copyright law. This isn't the only good arithmetic drill program around, but it is certainly meets all my requirements. Recommended.

MULTIPLICATION & DIVISION: For grades 2-8. Most of the comments about the addition & subtraction package also apply here. The student can choose a 1-3 digit multiplier to go with a 3 digit multiplicand, and then solve the problem in proper right to left order, dealing correctly with each digit and carry along the way before the program will allow the next step to be entered. Similarly, division may be be up to a 3 digit divisor, with a dividend size to match. The cursor moves all around the properly-shown problem, selecting entries in the answer, carry and remainder area in order until the solution is complete. All that is lacking is decimal remainders. Recommended.

LINEAR EQUATIONS: For grades 7-11. Given an algebra problem of the form: AX + B = C, this program leads the student to a proper solution, selecting which of 5 rules to apply next in reaching an answer. As in the other CBS programs in this series, students are shown each step along the way, and required to at least type in the correct answer to each step, even when they are unable to finish by themselves. Errors are both noted and explained, a good touch. Procedural and computational errors are noted separately, and shown as totals at the end of each session. This is the only commercial drill program of its type I've tested, and I can't think of any way to improve it. It will help even some college students who have carefully avoided math too long. Recommended.

QUADRATIC EQUATIONS: For grades 9-12. This unique program does a good job of teaching a tough concept step-by-step. Each year our bottom level college math courses lose students who simply can't (won't) learn quadratic equations. With this program, they can practice all month if necessary until the ideas begin to sink in. As with the other packages, the problems are broken up into small parts, each of which is solved separately, with one exception. Neither the crucial act of specifying the two terms is explained, nor the FOIL method of testing whether the student's suggested terms are correct.

SURVIVAL MATH

Math simulation games for grade 7-12 for the **64**. diskette.
Sunburst Communications, 39 Washington Av., Pleasantville NY 10570 (800/431-1934)
Reviewer: Elizabeth Kaspar

At last, 4 creative, interesting and educationally sound math simulations! Tested reading levels are appropriate and the manual well written. In Travel Agent Contest, students have X dollars to spend, must plan transportation, hotels, meals, etc. In the Shopper simulation, the student is timed while selecting economical buys. Hot Dog Stand is similar to **Lemonade**, focusing on profit. The toughest, Foreman's Assistant, uses many kinds of math to determine construction materials and cost. Each wrong answer is measured in days lost on the job. Readability and user friendliess excellent, but why not include graphics? Still, the best math practice program I've seen.

TESTMASTER

Test maker utility for the **64** or **CBM/PET**, by Michael Horner. $35 diskette.
Midwest Software, Box 214, Farmington MI 48024 (313/477-0897).
Requires CBM disk drive. 30 day free replacement warranty. DOS-protected, spare copy $4.
Reviewer: Jim Strasma

Testmaster can handle up to 100 questions at once, keeping them in relative files on disk, and combines questions from several such files into a single test. This allows you to make each major topic in a course into a separate quiz file for pop tests, and then combine all the relevant files in a comprehensive exam. Questions may be true/false, multiple guess, or short answer; they may appear on screen or paper, and you can print out both an answer key and a response sheet. The program randomizes the order of questions within test sections and the order of suggested responses. Both tend to take a set (the odds of 2 matching answers in a row are fairly high), but students haven't noticed yet. Jim Strasma uses **Testmaster** for all his major tests, giving alternate forms of the same test to students sitting next to each other. Grading time is much reduced. Highly recommended.

TRAINS

Train simulation for ages 10-Adult for the **64**, by Interactive Pictures Systems, Inc.
$35-40? diskette.
Spinnaker, 215 First St., Cambridge MA 02142.
Reviewer: Jim Strasma

This simulation of the economics of running a steam train in the old West is great fun--one of the best of the already highly-acclaimed Spinnaker products to date. As in a real-life railroad, it is important to stay on schedule, and to balance supplies of money, coal, wood, ore, oil, and so on. It's also important to find optimum routes and to respond quickly to messages you receive. The train itself is controlled entirely by the joystick. You have a choice of 8 different urban and rural routes to service. Each is detailed and accurately colored, though not as pretty as the animated scene that entertains you between routes (to a spritely tune, of course). This is the first Spinnaker program we've seen that appealed as much to me as to son Jamie, age 9. Highly recommended.

WIZ TYPE
Typing game for the **64**, by Sydney Development. $35 diskette.
Sierra, Sierra On-Line Bldg., Coarsegold CA 93614 (209/683-6858).
DOS-protected. Media warranty.
Reviewer: Jim Strasma

Despite a recent unfavorable review in Infoworld, this is my new favorite typing practice game. If a game this fun doesn't inspire you to improve your speed, nothing else will either. It barely attempts to teach you the proper finger positions, offering only a chart before each of the 20 levels and a drill option that focuses on the positions you are working on. Once those are learned, **Wiz Type** is highly effective in forcing you, the Wizard, to try just once more to zap the dragon spirit instead of being fried yourself for typing too slowly. The action here is captivating, with the spirit throwing up new words for you, you zapping them by quick typing, and each of your expressions changing to match the progress of the game. If you win often enough, you'll get a sentence to type in a bonus round, for extra points. Then there are word and paragraph typing exercises, with Bung (the court jester) bouncing along to show the pace. The sample texts are quite interesting and varied, or you may supply your own. After a game, you may see a graph of your progress. Infoworld is correct about the sample sentences needing a second space after periods and a second hyphen in a dash; most programmers don't seem to have learned that yet. However, they are not correct in asserting that the program doesn't allow RETURN to terminate a word or sentence. **Wiz Type** is just the thing for power building, and a perfect reward for students finishing their drills in a typing class. Highly recommended to typists interested in improving speed and accuracy.

SYNOPSIS

Adventure games discover, explore, and collect objects or treasures. These games often take days or weeks to complete.

WHAT ADVENTURE GAMES DO

The **first Adventure games** were written by programmers on very large computers. They **consisted of a series of words** briefly describing hypothetical locations or situations. The **"adventurer" would explore** at leisure, **seeking objects and treasures** to collect and return "home," **while overcoming mysterious problems and dangers. To move, the adventurer typed simple one-letter directions or two word phrases,** like S (move south) or DROP KEY. Rarely did the programs impose a time limit. These simple word discovery games (that nevertheless used huge amounts of computer memory) have evolved into complex search games, with the most sophisticated programs recognizing full English sentences or adding fancy color and graphics pictures to the original word games and riddles.

WHAT TO LOOK FOR (CHARACTERISTICS)

A good adventure game has brief commands, or accepts abbreviations for commonly-used commands. It should also **use and stretch your knowledge,** without merely being difficult. Good music and graphics are an asset, although they use up valuable memory and diskette storage, and may delay moves. **Quick response** is also important. Having a time limit may or may not be good, depending on whether you like to work under pressure.

We appreciate adventures that accept the **standard language for common tasks,** such as N, S, E, W, U, & D for directions, TAKE ALL for collecting things, LOOK to see your surroundings, INVENTORY to see what you're carrying, and HELP to get a helpful hint. We also appreciate adventures that can be **solved without immoral behavior.** Too many adventures are based on the concept, "if it moves, shoot it," and "if you see it, swipe it." We also prefer those where you can **pause or save a game in progress.** Playing an adventure perfectly can take months.

Those who play board versions of dungeons and dragons also praise adventures that **accurately reflect the rules for that type of game,** such as rolling 20-sided dice for various aspects of your adventurer's character, gaining ability with experience, and being able to assemble a party of several adventurers in a common cause. Naturally, no one program includes all of the above-praised ideas, but those from Infocom often come close.

ADVENTURE WRITER

Adventure generator for the **64,** by Graeme Yeandle. $50 diskette.
Code Writer Corp., 7847 N. Caldwell Av., Niles IL 60648 (800/621-4109 or 312/470-0700)
Requires CBM disk drive. Printer optional.
DOS-protected. 1 year free replacement warranty. Written in BASIC.
Reviewer: Jim Strasma

Adventure Writer is a serious aid to a less than serious chore--designing adventure games. By keeping track of many details for you, **Adventure Writer** allows even relatively new computerists to design interesting and complex adventures. This can be of real value in the Church, for example, where an imaginative pastor, teacher, or youth leader can use it to bring a Bible story to life, or teach an important lesson without a lecture. Since **Adventure Writer** includes most of the usual options of an adventure program, it shouldn't surprise you that using it effectively requires planning and practice. It is, in fact, a special purpose computer language, and must be learned, like any other language, aided by its various menus and a detailed and readable manual. Just as when you play an adventure, you will need to write down every place visited, all connections to other places, objects encountered, descriptions, messages, items to be worn or carried, points to be received, limits to such things as bumping around in the dark without a light, and so on. On the

other hand, the results will be worth it. To write an equivalent adventure without **Adventure Writer** would be beyond the skills of most Commodore owners. Recommended.

CASTLE WOLFENSTEIN
Adventure for the **64**. $30 diskette.
Muse, 347 Charles St., Baltimore MD 21201. Unprotected.
Reviewer: Jim Strasma

Try to escape from a large building full of guards. You start out with a pistol, and gain other needed items, such as a uniform, keys and weapons, by either opening chests found in each room or by killing guards. Your goal is to get out, and also find the secret battle plans. Morally, the game is a disaster. You cannot get out without killing human guards. But as an adventure, it's quite enjoyable--more complex than **Shamus** on the VIC, and almost as fast, except when changing rooms. There is little use of sound, except for brief snippets of real, though gutteral, speech. Includes the usual playing aids, such as keyboard and joystick control, standard or random room arrangements, and resume. Recommended for adults who enjoy killing games.

DEADLINE
Mystery adventure for the **64**, by Infocom. $30 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Requires 1541 disk drive. Printer optional
No stated warranty. Written in machine-language. DOS protected.
Completion time: 12 hours alotted
Reviewer: Jim Strasma

You are a police detective, asked by a local lawyer to look into the apparent death by drug overdose of a man known to have been about to revise his will. He may have committed suicide due to a failing business. Persons involved include his wife, his housekeeper, his personal secretary, his business partner, and his son (a known drug user who recently threatened his father.) In clearing up the mystery, you have the help of other police and various clues, including lab reports, pills found near the body, and preliminary interviews with each character. There is a time limit of twelve hours. Don't miss the reading of the will at Noon. This is the first adventure in which you can really chat with the characters. Sentences like "Mrs. Robner, tell me about your husband" and "Ask Sergeant Duffy to analyze the telephone for fingerprints" are likely to be understood. There are many possible endings, depending on which clues are found, which questions are asked, and on your timing. If you think you've solved your case, you may accuse people, or even arrest them. After the arrest, your performance will be rated. You may save **Deadline** midstream, and print a copy of the dialogue for later study. Very well done. Recommended.

PLANETFALL
Science fiction adventure for the **64**. $40-50 diskette.
Infocom, 55 Wheeler St., Cambridge MA 02138
Reviewer: Jerry Carter, Art Lewis Kimball, Jim Oldfield

In this second adventure in Infocom's science fiction series, you're assigned to a stellar patrol ship as an Ensign Seventh Class (you scrub floors). Your spaceship is blown up, you're stranded on a completely strange planet, you're coming down with a disease, and must discover and fix what went wrong. You can feel living, breathing people nearby, but can't find them. The only intelligent(?) creature you've found is Floyd--an all-purpose robot, who prefers to play 'Hide & Seek' than answer questions. What you need is a key to this mystery--and to that stupid locked closet. Be sure to 'save' your position frequently; there are lots of holes to fall in, not to mention the grues. **Planetfall** accepts multi-word commands, and is Infocom's first full-fledged comedy. As with **Witness**, quality and depth is built-in to the game.

SCROLLS OF ABADON
Arcade adventure for 1-2 players for the **64.** $35 diskette.
Access Software, 925 E. 900 S., Salt Lake City UT 84105
Requires 1541 disk drive and joystick. DOS-protected. 90 day limited warranty.
Reviewer: Jim Strasma

Scrolls of Adadon is a complex multi-screen variation on **Pac Man,** with touches from **Q*Bert.** Your character drops onto a game board hanging in space, and begins collecting coins lying on the ground. Eventually, baddies join you. When you move on to the next board with similar activities, more baddies appear earlier. You will occasionally find hints, such as a command to allow you to overcome the one-way travel rules. Victory requires finding 4 parts of a magic amulet, and then being dropped into the next of 4 levels of the game--if we ever make it! This is a sufficiently complex arcade game to occupy you for days. Each board has 4 exits, and as in a regular adventure, you must avoid going in circles--aided here by a map visible at the press of a key. Thankfully, you are not allowed to fall off the grid with a faulty move. Our one objection, but a large one, is that its DOS protection is very picky. Be sure you can return the program if it fails on your system. A worthy addition to the library of any arcadian.

SEASTALKER
Junior adventure for the **64.** $40 diskette.
Infocom, 55 Wheeler St., Cambridge MA 02138
Reviewer: Art Lewis Kimball

This is the first "Junior Adventure" from Infocom and an excellent one for beginners. The "old timers" will find some perplexing problems as well, but don't expect the challenges or sophistication of the **Zorks** or **Planetfall.** With the aid of a faithful(?) assistant, you must use an untested prototype submarine to find your way to the undersea complex, discover a traitor, make some alterations to your sub and finally do battle with a sea monster! No mazes in this one--but it does have some interesting puzzles. It is the first Infocom game to include hints (up to Infocom's excellent standards--it's nearly impossible to tell what the hint means until the game lets you!) You input your own name at the beginning of the game to "personalize" it. Great documentation as usual.

SORCERER
Magic adventure for the **64.** $40 diskette.
Infocom, 55 Wheeler St., Cambridge MA 02138
Reviewer: Art Lewis Kimball

Sorcerer begins with a nightmare--and ends with a promotion! Belboz has gotten himself lost and it's up to you to brave the perils of an underground kingdom to find him. By the time you have finished this adventure, your Spell Book will be bursting with new spells, and you will be more powerful than ever--ready to face the challenges of the third part of the **Sorcerer** trilogy. Infocom has once again produced a winner in adventure games. This one will provide hours of fun and fascination and leave you impatient for part three!

STARCROSS
Science fiction adventure for the **64,** by Infocom. $40 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Requires 1541 disk drive. Printer optional.
90 day media warranty. Written in machine-language. DOS protected.
Completion time: About a month
Reviewers: Art Lewis Kimball, Jim Strasma

You are in a one-person mining ship, seeking black holes in the year 2186. You have been wandering through space for months with no one to talk to except a surly computer. As you begin, your automatic instruments have detected something. Naturally, you must

investigate. Since wandering won't take you far in such a small ship, or even outside it, you have to move the ship. Fortunately, the ship is controlled by English words via computer. But much to your dismay, you seem to be alone on a dying world. You must begin repairing things immediately--and don't even speak the language! An ancient tribal chieftain, a bored and lonely spider, and a very busy maintenance mouse might help if. As usual, this Infocom game interprets even strange and lengthy commands. Unfortunately, the game is almost impossible to play without the included map and navigational chart, and barely possible then. Non-experts will be truly thankful for the optional hint manuals. Not for beginning adventurers, but well done. Recommended.

SUSPENDED
Science fiction adventure for the **64**, by Infocom. $30 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Requires 1541 disk drive. Printer optional. No stated warranty. Machine-language.
Completion time: About a month
Reviewers: Joe Allain, Art Lewis Kimball, Jim Strasma

In **Suspended**, you are in suspended animation for 500 years to oversee the computers and robots that maintain the weather, food supply and transportation systems of the planet. Your predecessor went berserk and you understand how he felt. You cannot do anything yourself, but must control a small army of 6 robots. Each has its own abilities and weaknesses, that you use, alone or together, to tackle the problems which caused the system to rouse you from sleep. You must figure out where your robots are, get them headed in the right direction, and decipher their sometimes cryptic reports on what is wrong. Your performance is rated by how many people die. Not only that, but you have to succeed within a certain time span, or some guys from the surface come down and disconnect you! Unlike most adventures, you must rely on a heavy cardboard map the game supplies. Until you are very familiar with the game, don't worry about deaths above ground; just solve problems. **Suspended** is best suited to very experienced players. Recommended.

SWORD OF FARGOAL
Graphic adventure for the **64** or **VIC**, by Jeff McCord. $30 diskette.
Epyx, Box 4247, Mountain View CA 94040 (415/964-8021)
Requires 1541 disk drive and joystick. 30 day media warranty. BASIC. DOS protected.
Completion time: About 3 hours allotted
Reviewers: Bill McDannell, Jim Strasma

Sword of Fargoal is Epyx's first joystick adventure for the 64, in which you seek a sword in a dungeon. Unlike their others, it also eventually shows all of the current dungeon level on screen at once. This avoids time delays for redrawing rooms. To preserve the goal of discovery, most of the level is hidden from view until you have explored it with your lantern. The other staples of Epyx adventures--monsters, treasures, spells, traps, potions and so on--are all here, but simplified enough that the keyboard is rarely needed. To win, you must explore at least 16-21 levels of a dungeon, find a magic sword, and get out again. Once the sword is found, you have a half hour to complete your quest. But don't worry; you aren't likely to get that far any time soon. Each time you enter a level, it changes room arrangements. If you hang around a level too long, monsters from downstairs harrass you. Temples are fairly safe resting places, although some monsters are irreligious, and there's no way to tell traps apart from treasure. If you don't collect gold when found, monsters may swipe it. Other thieves are after your spells, maps, etc. The VIC version in some ways is simpler than the 64 version, yet more fun for us to play. Devoted dungeons and dragons fans may miss the ability to use characters from other adventures, and all will miss having a way to save a game in progress. But they will forgive Epyx for these omissions after seeing the excellent high-resolution graphics and hearing the funereal sounds of the dungeon. Highly recommended.

TELENGARD
Graphic adventure for the **64** or **PET**. $24 cassette or $28 diskette?
Avalon Hill Microcomputer Games Division, 4517 Hartford Rd., Baltimore MD 21214
Requires Datasette and joystick, 32K. Compiled BASIC. DOS protected.
Completion time: Endless
Reviewer: John O'Hare, Jim Strasma, Rich Westerman

Though most Avalon Hill adventure games do not use graphics and sound, **Telengard** does, and well. It has 50 dungeon levels (each with 40000 rooms!), 10 different monsters, and 36 magical spells. You can get armor, shields, swords for fighting, gold, silver, cloaks, boots, gems, jewels, and rings for all occasions. Along the way, you will encounter inns for resting and turning in your plunder, fountains of colored waters, amd misty cubes, and safes to crack for riches, not to mention traps everywhere. Altars will request donations (generosity is rewarded), teleports will suddenly move you to unknown locations, and magic thrones will give unpredictable results. Beginners, forget about winning and get ready to be 'killed' a lot; this dungeon is played strictly for points. If you can make it down to level 30 or so safely with your character using the highest level spells, consider yourself a seasoned adventurer. With excellent sprite graphics, surprising sound effects, real-time animation, and playing time from a minute to days, this is a most enjoyable escape from everyday life. Perhaps most intimidating is that it is played in real-time. The action seems a bit too random at times, the program uses the keyboard in a non-standard way, the manual needs to be updated for the 64, and it takes a long time to load from cassette. **Telengard** is one of the best. Recommended.

TEMPLE OF APSHAI and UPPER REACHES OF APSHAI
Graphic adventure for the **64**. $35-40 diskette per game.
Epyx, Box 4247, Mountain View CA 94040 (415/964-8021)
Requires 1541 disk drive. Joystick optional. 30 day media warranty. BASIC. Unprotected.
Completion time: About a week
Reviewers: Wayne Halcomb, Jim Oldfield, Jim Strasma, Rich Westerman

TEMPLE OF APSHAI: This is an excellent Dungeon and Dragons role-playing game, voted "best game of the year" few years ago. Within the dungeon, you are immersed into another world battling many baddies. After haggling with the innkeeper for your supplies, you're off to plunder the riches of Apshai. With four levels of play, you can explore over 200 rooms for treasures, but watch out for more than 20 different monsters and traps. The 64 version of **Temple** vastly improves on the graphics of the earlier PET version, making very good use of sprites and high-resolution graphics for the adventurer and monsters, plus a little sound. Best are the Olde English characters used during bargaining. However, it still takes a long time to redraw the screen when changing rooms. Highly recommended.

UPPER REACHES OF APSHAI: This extension of the popular Dungeon and Dragons role-playing game will quickly show you just how foolish adventuring can become. Officially, the **Upper Reaches of Apshai** is an additional data file that continues the **Temple** adventure with stronger and more numerous monsters. Theoretically, to do battle, you must own and have survived the main program, **Temple of Apshai.** Unofficially, **Upper Reaches** lampoons the entire idea of adventure games. The locale this time is the above-ground portion of the **Temple** ruins. But the surroundings will remind you more of someone's Victorian home. As for the monsters, you haven't lived until you've seen a gun-toting tomato (known as a "Killer Tomato", of course). You'll also have fun shooing arrows at housewives so you can steal their laundry, picking berries in the back yard, wrestling with drunken sailors who are defending Chicken Cacchiatori, and learning to think of your dog as something other than man's best friend. And all this is on level one! The real excitement awaits you on level 4, where there are ordinary monks, sleeping monks, drunken monks, and vampire monks, and the treasures include such sought-after items as bath robes, books, and ale. The program continues to make good use of sprites and high-resolution graphics for the adventurer and monsters, and provides an enjoyable variation on one of the best-known adventures for **Temple of Apshai** addicts.

ULTIMA II and III

Dungeons and dragons-like fantasy adventure for the **64**, by Lord British.
$60 diskettes (2) and map.
Sierra On-Line, Sierra On-Line Building, Coarsegold CA 93614 (209/683-6858).
Reviewer: Jim Strasma

ULTIMA II: REVENGE OF THE ENCHANTRESS: This two disk graphic adventure has been quite a hit. Its author, "Lord British," has a devoted following of Dungeons & Dragons adventurers. **Ultima II** is a sequel to an earlier adventure not offered on the 64. In this version, you are a wanderer assigned to defeat a truly horrible power. As usual in D & D adventures, you start out weak and empty handed, and have to find weapons, armour and supplies as you travel, in addition to bartering and fighting with the natives, and solving problems along the way. The game covers all 9 planets of Sol, and 5 distinct time periods. You have a choice of being one of several types of beings, and may divide up the points allotted your character among various attributes such as strength and wisdom. Then, with much swapping of diskettes, play begins. There are many commands of single keystrokes to learn, not all obvious (e.g., north is "@"). Fortunately, there is a quick reference card, with very tiny print, and a colorful cloth handkerchief map of the world to assist you during your travels. After their first hour of play, Jamie Strasma got farther than his dad, but both were killed. In the process they learned you can only have one saved character per diskette, and should save the game often. The graphics were interesting and helpful, but not necessarily more fun than a good text-only adventure. **Ultima II** is an excellent addition to the 64 library, but not for the impatient. Recommended for serious adventurers.

ULTIMA III: EXODUS: In this third version, you command a group of 4 adventurers, each of which can be more or less any fantasy creature you like. They wander a world which seems prettier and more complex than Ultima II's. Jamie likes it immensely, and other reviewers have praised it as the very best (most complex in its features) adventure game ever developed, but Jim doesn't like it, despite its technical brilliance. The combination of another game devoted primarily to fighting, and the image of Satan on the package cover makes it one he would not buy or use. Nonetheless, those who enjoy such games will like it better than anything else yet developed, and buy it in droves.

WITNESS

Mystery adventure for the **64**. $40 diskette.
Infocom, 55 Wheeler St., Cambridge MA 02138.
Requires 1541 disk drive. Printer optional.
90 day media warranty. Written in machine-language. DOS protected.
Completion time: 12 hours allotted
Reviewer: Jim Oldfield, Jr., Jim Strasma

Witness is one of the second in the Infocom series of Interlogic detective stories. In it, you are a private detective in the 1930's hired to protect a man whose life has just been threatened. His adulterous wife was recently shot, and her partner blames your client. In the course of your investigation, the threat may be carried out. Other family members who may be involved include an angry daughter and a Chinese butler. In clearing up the mystery, you have the help of the local police and various clues, including a matchbook and a suicide note. There is a 12-hour time limit, and it's unlikely that you'll crack the case on the first try. Because the descriptions and the opening statements are so detailed and realistic, you are tempted to use more dialogue than the program can handle, so forget about politeness and most questions. Recommended.

ZORK I, II, and III

Text adventure for the **64**, by Infocom. $30 diskette per game.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Requires 1541 disk drive. Printer optional.
No stated warranty. Written in machine-language. DOS protected.
Completion time: About a month
Reviewer: Jim Strasma

ZORK I: THE GREAT UNDERGROUND EMPIRE: This is the first of the great Infocom adventures. When first released, it was voted "game of the year", and it's still among the best. Unlike most adventures, Infocom games understand full sentences, thanks to the speed of their interpreter and the compactness of their way of storing words. All that is lacking is graphics and sound. As in most adventures, your role is to explore around, in and under an old house to find and recover 20 hidden treasures. Each location will have one or more ways out (not always the same as the way in), and many will contain things you can use. Some will also contain hidden objects you must examine. There is a limit to what you can carry, and it is hard to know what will be needed most. It helps to draw a map as you go, listing the name of each place, its contents, and ways out. A single round of play is almost never enough. Too soon you've lost, for lack of something you missed. Fortunately, you can save your game at any time, to start again from that point, and even print out the dialogue for later study. Most of the usual conveniences are here, including short forms of the usual commands, full and brief descriptions of things you see, a lantern to light dark places, and a sword to use against nasty trolls. If only **Zork** understood the word "Help", the adventurer would have everything! Most people will enjoy the lavish descriptions and pleasant wit in **Zork I.** If it seems too difficult, a hint manual is available. Highly recommended.

ZORK II: THE WIZARD OF FROBOZZ:

In this second part of the famous **Zork** trilogy of adventures, you are to explore, this time in a forgotten corner of the Underground Empire under the control of the Wizard of Frobozz. He is a most tiresome wizard, constantly dropping by to suspend you five feet in the air, or do some other sophmoric stunt. Fortunately, the spells wear off with time. Your goal is to wander around, uncover secrets and treasures, and get out safely. Among the more interesting of your chores will be slaying a dragon, rescuing a princess, and learning to operate a large balloon. Highly recommended.

ZORK III: THE DUNGEON MASTER:

In this the conclusion of the famous Zork trilogy of adventures, you are to explore in the heart of the Underground Empire. Your goal is to uncover the secret purpose of the Dungeon Master who oversees your wanderings. As usual, there are strange places to map, strange creatures to meet, writings to read, interesting objects to be taken and used, and puzzles galore. Unless you are an extremely skilled adventurer, you'll enjoy **Zork III** more after completing **Zork I** and **Zork II.** Highly recommended.

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SYNOPSIS

These programs entertain with color graphics and sound, while testing your eye-hand coordination, usually within a time limit. They can be further grouped as rock-shooting, alien-shoot out, maze, dodging or hopping games. Most require a joystick, paddles or trackball to move.

WHAT ARCADE GAMES DO

The eye-hand coordination and quick reflexes of our younger generation has improved dramatically since the advent of Arcade games. How to drive a race car or shoot aliens or run through a maze, are now part of the culture of a ten year old child, as well as a strongly developed sense of color perception and an unconscious familiarity with many popular or classical tunes. Most arcade games are one-person games that use a joystick to move an object in one of four directions, to escape or attack something.

Arcade games are the most popular category of programs. They are also among the most competitive, with a dozen also-rans for every great success. Part of this is due to natural limitations; there are only so many ways to arrange and move items on a small screen. But part is due to lack of creativity; most are pure imitations, especially of video arcade games. **Pong** was fine in its day, as were **Space Invaders, Asteroids, Defender, Pac Man** and **Frogger.** But one good example of each is enough.

WHAT TO LOOK FOR (CHARACTERISTICS)

We need to be clear about what we are teaching ourselves with games -- to kill strangers on sight? Will that help solve our problems? We need more creative games, that reward players for actions more wholesome than killing.

As you read these reviews, expect **most arcade games** to **fit into one of the following categories:**

* (alien) shoot-out (example: A.E.)
* bouncing game (example: Pong)
* Centipede game (shoot-out in all directions)
* Defender game (horizontal scrolling shoot-out) (example: Astroblitz)
* hopping game (example: Frogger)
* ladder (climbing) game (example: Donkey Kong)
* (eating) maze chase (example: Jelly Monsters)
* pinball simulation (example: Pinball Construction Set)
* rescue game (example: Choplifter)
* rock-shooting game (example: Asteroids)
* Snake game (dodging maze) (example: Tron)
* steering (car race or spacecraft) game (example: Pole Position)

Most teach only one skill of human value--eye-hand coordination along geometric coordinates of up, down, left, or right--using a joystick, game paddles, or a trackball. Some are great fun, and may help drain off some violent impulses to which we all are prey. The very best of these scored well in the ratings. But **other top-scoring games** did so because they were different; because they **rewarded careful thought or kindness or cooperation or a sense of beauty.** Since many computerists need excuses to be with others, games were top-rated that allow **more than one to play, especially together,** rather than against each other.

Don't just take our word for the value of a game. Play it yourself in the store or at home, and ask yourself, **"If I buy this, will I honestly play it as long as I worked to make the money to buy it?" A truly satisfying purchase will have enough variation, enough strategy, and enough beauty to hold your attention for months.** Many games will be lucky to hold your interest through the first hour.

A.E.
Alien shoot-out for the **VIC**, by Jun Wada, Makoto Horai & Steven Ohmert. $40 cartridge.
Broderbund, 1938 Fourth St., San Rafael CA 94901 (415/456-6424)
Requires joystick. Full warranty. Written in machine-language.
Reviewer: Jim Strasma

A.E. in Japanese stands for "ray," as in Sting Ray, and that is what you shoot in this most unusual shootout game. Unlike other rays, your targets fly through the air, and even through Space, but always in formation, like Geese in Fall. The A.E.'s are pollution control robots gone wild, much like the sparrows a fool once imported as pets. Now both are pests, and Broderbund assures us we shouldn't feel guilty about getting rid of a few A.E.'s. There are, after all, several more, and when uncontrolled, they're rather a nuisance. Mostly they just fly around, but sometimes they shoot, and being rammed by one is fatal. So, there you are, laser in hand, firing at a swarm of approaching A.E.'s. Remember, your missile won't explode until you release the fire button, and must be near the A.E.'s then to do any good. Also, it does no good to hit only part of a flight of A.E.'s. If any escape, they'll just repopulate and return to bother you again. Sooner or later, you'll manage to destroy 3 full flights, and advance to the next of 4 levels of play. The progression is from a city street, to the seas south of Japan, to a Space colony to interstellar Space, as you drive the pests further and further from home. And if you succeed at that level, we're sure you'll be thrilled to discover that still other A.E.'s have created a new and more difficult disturbance back at level one. On the Apple, this is one of the very best games, and a fair part of the fun has been preserved in the VIC version. However, the graphics, although highly detailed and sometimes colorful, are harder to stare at than in the original, and six of the original ten screens are missing. The sound is pleasant, but gets tiresome after a while. If you haven't seen the Apple version, you'll love this one; if you have seen the original, you'll feel like someone watered your Coke, but still enjoy the game a lot. Recommended.

AXIS ASSASSIN
Alien shootout for the **64**, by John Field. $35 diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403.
Requires 1541 and joystick. DOS-protected. 90 day media warranty.
Reviewer: Jim Strasma

No, this isn't a WW II German adventure, despite the black-gloved hand fondling a joystick on the cover. It's a take off on the popular arcade game **Tempest**, in which lots of weird bugs crawl toward you from a pit (seen from a side view), while you run around the edge of the pit shooting at them. It's a fun game, if only for its blatant suspension of the laws of physics as you glide effortlessly around corners too sharp for any sports car. Within the limits above, the game is very flexible, with a large supply of alternative board shapes from which to select, and lots of different bugs to zap. After you tire of the boards, there is reportedly a second combat mode in which you deal with a bigger bug, but the method to reach that mode (hitting SPACE when leaving a board) hasn't worked for us yet. Perhaps that is a reflection on us--the game claims to be for expert arcadians only. **Axis Assassin** has all the expected amenities: pause, demo mode, optional sound, and restart. I like everything about it but the name. As the only **Tempest** I've seen on the 64, it's well done. Recommended.

B.C.'S QUEST FOR TIRES
Rescue game for 1-2 players for the **64**. $35 diskette or $40 cartridge.
Sierra, Sierra On-Line Building, Coarsegold CA 93614 (209/683-6858)
Requires joystick. Diskette DOS-protected.
Reviewer: Jim Strasma

B.C. is one of our favorite but rarely seen cartoon strips. All the characters from the strip are here, in their typical funny roles. Although skilled arcadians have been

known to sneer at the ease of playing this game at lower levels, we find it both engrossing and challenging. Perhaps if we paid more attention to the varied chores and less to the excellent graphics, we'd do better. You are Thor, riding on a Stone age unicycle to rescue Sweet Chick from the dinosaur. You may jump or duck, slow down or speed up, in any combination, and use the fire button to enhance other movements. You start with 5 wheels (lives), which you definitely need. Fortunately, there is a pause option. Sneer if you want to, but **Quest For Tires** is still one of my favorites! Highly recommended.

BEACH-HEAD
Sea war simulation for 1-2 players for the **64**, by Bruce Carver.
Access Software, 925 E. 900 South, Salt Lake City UT 84105.
Requires joystick. Compiled and machine-language. DOS protected. No stated warranty.
Reviewers: Sue O'Dwyer, Rick Roberson, Jim Strasma

A real winner from Access, that simulates a Pacific sea invasion! Imagine graphics as good as **Neutral Zone**, but with the variety and sustained interest of **Jupiter Jumpman.** In a hi-res overview of an island lagoon, you choose whether to invade via the front door or the hidden back door. In the latter, you'll catch the enemy napping and face less opposition, but must first maneuver your 10-ship fleet through mines and randomly-fired torpedoes. Once in the lagoon, attack the enemy fleet quickly. Then the scene shifts to the deck of your ship, under attack by enemy aircraft. Next, you must sink the enemy fleet in an artillery duel; aim for quick results, or expect to lose ships. In the next round, you must run a gamut of obstacles and enemy fire on a beach. Any that succeed will face the enemy fort, whose gun positions must be destroyed before they can fire back. After each tank gets through, the opposing forces are a bit more alert, and the challenge greater. The game includes the usual mechanical aids: a demo mode, a way to start from any of the 5 boards, a pause feature, an optional record of the top 10 scores, 4 skill levels (or watch the computer play itself), and even a way to alter sound and colors. Our only complaint is that practice scores can be recorded as real ones, and there's no obvious score advantage from playing at a higher than beginner level. Apart from that, the game is about perfect. We have yet to win a game. Meanwhile, we are thoroughly enjoying the highly varied game play, stunning graphics and realistic (though unmusical) sounds; they even have the doppler effect. Highly recommended to all who like war games.

BLUE MAX
World War I flying simulation for 1 player for the **64.** $30 diskette.
Synapse Software, 5221 Central Av., No.200, Richmond CA 94804.
Requires joystick. DOS-protected (loads from 1541 or 4040). 90 day media warranty.
Reviewers: Patrick Condon, Mark Niggemann, Jim Strasma

This game is for the World War I Ace in all of us. In this three-dimensional scrolling landscape flight simulator, you take off and fly a WW I bi-plane diagonally on the screen. The goal is to destroy 3 assigned targets in "enemy" territory, along with anything else handy, including buildings, bridges, roads, tanks, boats, planes, and cars. Targets can be attacked from high altitude with bombs, or from low altitude by strafing. Hotshots can try to fly under bridges. Enemy planes and ground-based artillery shoot back from all directions, but are a small threat. Find a field to land in when your fuel runs low or somebody shoots a hole in your tanks. If you hit your 3 prime targets, you can attack other targets in an enemy city. You have a choice of pilot or arcade-game controls for "up" and "down." Readouts show altitute, but practical guidance comes from the plane's shadow below. The program rates your performance when you're all done. It's a simple shoot-'em-up in concept, but difficult to play well and therefore appealing. Though a war game, it is state of the art. Recommended.

CHOPLIFTER
Rescue game for the **64** or **VIC**, by Tom Griner. $45 cartridge.
Creative Software, Box 4030, 201 San Antonio Circle, Mountain View CA 94040
Requires joystick. Written in machine-language.
Reviewers: John O'Hare, Bill Holt, Jim Oldfield, Jr., Keith Peterson, Jamie and Jim Strasma, Dick Wenner

Choplifter is still the best VIC cartridge on the market, and good on the 64. The object is to rescue and return your prisoners who are being held captive in prison block houses on the other side of the border. With 3 helicopters, you must try to rescue 64 prisoners of war while dodging tanks, planes, and heat sinking missiles [satellites]. Each raid begins and ends at a friendly base, across a fence from enemy territory. Of the defenders, satellites are easily shot and try to ram you, tanks can only shoot part-way up (most threatening when you're on the ground), and jets are most dangerous as they drop bombs. To initiate a rescue, land chopper on a POW hut, then park it nearby. Prisoners pour into your chopper and defenders try to destroy you and any stragglers. You can fly further into enemy territory to save up to 16 prisoners. Bill Holt and Dick Wenner found the 64 version quite enjoyable, with excellent graphics and challenge, but the controls somewhat difficult to master. They found it difficult to position the chopper to defend against the jets. If they held the button down for sustained fire, they usually got shot down in flames. It has GREAT animation, sound, and graphics, especially the high-resolution 3D effects like perspective changes in passing border fence, and stars moving smoothly in the background. Even the hostages wave at the chopper while running after it. The colors are also pleasant, but less developed than the designs. It has realistic sounds of bullets, bombs, and chopper blades. Even the 'cover' of the program is fun to watch! It truly shows off the VIC by using a social goal that is far better than most arcade games. You can play it for hours and still find each helicopter launch exciting. It's good, clean, violent fun! Highly recommended.

DONKEY KONG
Rescue game for 1-2 players for the **64**, by Nintendo. $50 cartridge.
Atarisoft, Sunnyvale CA. Requires joystick.
Reviewer: Jim Strasma

Another truly successful arcade game, faithfully converted to the **64**. You are Mario, trying to rescue your girlfriend from a large ape who has carried her off. To do so, you must climb from the bottom to the top of 4 different game boards, avoiding everything the big ape throws at you—a very difficult, but interesting task, with well done and varied graphics, including cartoon sequences. The sounds are also pleasant, though simple. If any Atari game is worth its lofty asking price, it would be **Donkey Kong**. Recommended.

EVOLUTION
Highly-varied game for the **64**, by Don Mattrick and Jeff Sember. $40 diskette.
Sydney Dataproducts, Inc., #129 - 444 Camino Del Rio South, San Diego CA 92108
Requires CBM disk drive. Joystick optional.
Media warranty. Written in machine-language. Unprotected.
Reviewers: Jim Strasma, Rich Westermann

Evolution has several different screens, each with a different but fairly realistic problem to solve. The idea behind it is superb. It attempts to demonstrate how the theory of evolution postulates we all began. It further throws us into the traumas of our most distant "ancestors." The object of the game is to "evolve" from a one-celled amoeba through assorted lower forms, trying to reach the highest--human, in which the final test of your superiority is a contest with mutants in space. Unfortunately, the situations aren't very realistic. Few beavers, for example, have to contend with crocodiles. That ruins the game for classroom use, but not for home play. **Evolution**'s graphics are well done and its sounds pleasant and optional, though obviously borrowed from the Apple version

with its more limited abilities. All the usual amenities, such as differing skill levels and saving your score, are included. There is also a welcome and still unusual practice option that lets you play only your favorite, or most troublesome screen. This is definitely one of the best and most wholesome games currently available. Both its theology and its science are imperfect, but rather well done, considering the ages of the authors (14 and 16 years old respectively). Highly recommended.

FRANTIC FREDDIE
Ladder game for the **64**, by Kris Halelid & Gregor Larson. $30 diskette.
Commercial Data Systems Ltd., 730 Eastview Av., Regina, SAS S4N 0A2 Canada
Requires CBM disk drive, and joystick.
Full 90 day warranty. Written in machine-language. DOS Protected.
Reviewers: Jim Oldfield, Jim Strasma

Frantic Freddie has some of the best sounds of any program we've tested. Never before have we heard a microcomputer play rock music at all, let alone well. So far we've counted nearly a half dozen pop and classical tunes, all well played in multi-part harmony! As if that weren't enough, the graphics and animation are also among the best we've ever seen. This is one you'll play like an addict, trying to see that next board and hear its tune. The game itself has a fairly common theme and simple mechanics. You are wandering among ladders and girders, seeking gold and other goodies, while avoiding other characters in the scene. Unlike some ladder games, you can't pass under a ladder. You may either turn around or climb it. Then you may come back down on the other side and continue on your way. If you manage to clear the board of prizes, the other wanderers fall off and you go on to a different board, with different wanderers. This goes on for at least seven boards, with one of two intermissions after every two boards. The best board we've found so far is Spiders, which plays Beethoven's "Fifth" symphony. Besides the need for a pause option, the only problem with the game may be one of copyright. Besides the current tunes, several characters appear to be Muppets and Smurfs. On the other hand, being featured in a game this good amounts to free advertising. As the banner headline which continually scrolls across the screen above the action says, "don't just watch, buy me."

FROGGER
Hopping game for the **64** or **VIC**, by Chuck Benson. $35 cassette or diskette.
Sierra On-Line/Vision, Sierra On-Line Building, Coarsegold CA 93614
Requires 1541 disk drive or Datasette. Joystick optional.
Good 90-day warranty (then $5). Written in machine-language. DOS protected.
Reviewers: Tom Green, Herb Gross, Sheldon Leemon, Jim Oldfield, Jr., Jim Strasma

Frogger is one of our personal favorite computer games for the 64, and makes the Apple][version look silly! In it, you maneuver a frog across a busy highway, past a snake-infested median strip and then across a rushing river filled with logs, diving turtles, and an occasional lady frog to escort home to either a tasty fly or a hungry crocodile. **Frogger** has everything: the screen motion on the screen is constant, intricate and wholesome (though not exactly "safe"); the colorful and detailed sprite characters are placed in a vivid, beautifully drawn scenario; and the continuously changing music is superb. The music can also be turned off separately, leaving only the action sounds. As for difficulty, it has two speeds, slow and fast, with additional pause and rerun controls. The first three levels are easier than in the arcade version, but each successive level gets more difficult. Even the instructions are good. The only drawback are its control and long loading time. It allows either keyboard or joystick control, but the game could not properly read "up" on either of my joysticks. To play the game, I had to reverse "down" and "up." This is one game the whole family will enjoy, and the best transfer of an arcade favorite to the 64 that's available on diskette AND cassette. Highly recommended.

GHOSTBUSTERS
by David Crane. $28 diskette.
Activision (Gamestar, 1302 State St., Santa Barbara CA 93101 (805/963-3487))
Reviewers: Rebecca Boren, Chris Mowrer, Mike Stout

If you've seen the movie, this is one game you'll appreciate; **Ghostbusters** is one of the year's best video games. Loosely based on the movie, the real plot is capturing Slimers and Roamers and defeating the dreaded Stay-Puff Marshmallow Man. Watch out for ghosts, because you may get "slimed," and be ready for that dreaded Stay-Puff marshmallow man (it's hard to win if you let him by). Loosely based on the movie, You set up your own Ghostbuster's franchise by borrowing $10,000 from the bank. With the money you purchase a car and equipment, a ghost vacuum, PK detector, image intensifier, and traps. A marshmallow sensor and bait for the Marshmallow Man come in handy. You then earn money by capturing ghosts and saving the city during a marshmallow alert. If you earn more than $10,000, you can try to enter Zuul by sneaking past the stomping Stay-Puff Marshmallow Man. If you don't earn enough money before the keymaster and the gatekeeper go to Zuul, the game ends with an irritating "Ha Ha Haaaaaaa!" (a rather disappointing end). If you earn more than $10,000 by the end of the game, you can put your money in an account, and call up the money by account number to use the next time you play. The charm of this game is not just the story. Written in just six weeks, the music and graphics are state-of-the-art. When the ghostbusters' title comes up, you are treated to a sing-along of Ray Parker Jr.'s title song, complete with the bouncing ball and words. It is truly an amazing bit of programming to have the state line scrolling horizontally along the bottom of the screen. The Ghostbuster song plays throughout the action of locating and eliminating ghosts, and a voice synthesizer that says "Ghostbusters" and "He slimed me. The play action is challenging--it takes practice to get your laser beams just right to capture a ghost without crossing them. It isn't so hard to get the hang of it. Even Rebecca Boren's 6-year-old was able to earn an account number and feel successful. This is a feel good game. Highly recommended if you have the time and patience.

GREENHOUSE
Non-violent ladder game for the **64**. Free public domain diskette.
Available from user groups
Requires joystick. Written in machine-language.
Reviewer: Jim Strasma

How wonderful it is that the first machine-language game for the 64 is wholesome! In 5 years of using PET programs, this is only the fourth game I've used whose object is entirely helpful, and this one is much more fun to ply than the others (BABY, TREES, and our own adaptation, EATER.) The object is to water flowers, cut down weeds and if you get far enough, chase away birds. This involves climbing a ladder, opening and shutting spigots, descending the ladder, and wielding a hoe--all to be done very rapidly, via joystick. The graphics are excellent, making full use of sprites. The farmer nods if you win, and shakes her head if you lose. Naturally, there's a nice little tune as she walks. Look for it in your user group library. Highly recommended!

JAWBREAKER II
Maze chase for the **64**. $35 cartridge ($30 on diskette).
Sierra On-Line/Vision, Sierra On-Line Building, Coarsegold CA 93614
Requires joystick.
Reviewers: Jim Oldfield, Jr., Jim Strasma

This is an excellent takeoff on **Pac Man** for younger game lovers. Instead of a full maze, you wander across horizontal levels, eating dots, and suckers, and being chased by rolling happy faces, called Jawbreakers. After eating one of four red dots, you may eat the happy faces. Jump from one level to another through moving holes in the horizontal walls. When you clear all the dots in a level, a toothbrush cleans your teeth. When you

are caught, all your teeth fall out instead. Ten skill levels will keep you busy for quite a while. The color is cute, the action is involved and smooth, but not hectic, and the sound is excellent (just like a carnival organ). The cartridge version is not noticeably different from the earlier diskette version, but may give you more time to eat the jawbreakers on a power pellet. Avoiding the long wait for the game to load from diskette is well worth the extra $5. Recommended for children under 10.

(JUPITER) JUMPMAN

Bouncing/ladder game for 1-4 players for the **64**. $30 diskette.
Epyx, Box 4247, Mountain View CA 94040 (415/964-8021)
Requires CBM disk drive and joystick.
30 day media warranty. Written in machine-language. Unprotected.
Reviewers: Sheldon Leemon, Bill McDannell, Keith Peterson, Jim Strasma, Roy Wagner

Jumpman is still nearly state of the art in Commodore games and a perennial favorite of Commodore user groups. It was also the favorite game at the first Lincoln College Commodore Computer Camp. It's the only game that kept Keith Peterson's attention for more than a half hour (he was still addicted after 12 hours and 17,000 points). A thinker's variation on the **Donkey Kong** theme, the idea is to defuse a space station full of bombs--fairly wholesome and life-affirming game. It features 5 ways to play the game, on 30 different screens, each with its own unique variation on the theme of running and jumping around a system of girders, ropes and ladders, collecting bombs and avoiding almost everything that moves. Baddies to avoid include bullets that change direction in mid-flight, random robots, falling bombs, flying bricks and rolling eggs. Even so, the only blood shed is your own. Only three levels have you destroy whatever's chasing you; the others encourage survival. We especially enjoy the ability to choose a level to play, and having enough lives (7), to play a while. With 8 different speeds, a 3 year old can have fun at speed 8, while challenging the best at speed 1. The only annoying aspects of the game are the music (good catchy tunes, but they get old after a while), and the lengthy waits between screens and at the game's end as the top 20 scores are recorded on diskette. Highly recommended.

LODE RUNNER

Running/ladder game for **all** models, by Doug Smith & Dane Bigham. Diskette.
Broderbund, 1938 Fourth St., San Rafael CA 94901 (415/456-6424).
Requires 1541 disk and joystick. DOS-protected.
Reviewer: Jim Strasma

Though **Lode Runner** struck me as a trivial game, it caught Jamie's fancy, and has been a hit with him for many months, first trying to work his way through its 100 built-in screen layouts, and then in designing his own boards. It is the latter, construction set feature that makes the game important, in my opinion. Otherwise, it would just be a Jumpman clone. In it, you are a little man, running around a screen nearly full of bricks, pursued by several other little men. Along the way, you pick up lots of little white bricks. If you succeed, a ladder out will descend from heaven, and you get to try the next board. Be careful where you drop though, it's easy to trap yourself. Although there is a harder Champion version available, even our most expert arcadians agreed the standard version is better. If you like Jumpman-type games, and would like to be able to design your own boards for them, you'll like this one.

MOONDUST
Steering game for the **64**. $37 cartridge.
Creative Software, P.O. Box 4030, 201 San Antonio Circle, Mountain View CA 94040
Requires joystick. 30 day limited warranty. Written in machine-language.
Reviewer: Jim Strasma

Moondust is a beautiful game, in which you guide a team of creatures through egg-laying and the growth of a new being. It is very reminiscent of the Star child in the movie "2001: A Space Odyssey." Beautiful high-resolution graphics, and pleasant semi-random multi-voice music greet you when you load **Moondust**. Then you are given several options and variations. The game definitely grows on you. At first, when we watched the game in action, we thought we were just seeing a sign-on sample play. Once you understand what's happening, you get excited about the possibilities. In the hands of a skilled user, the team behaves in concert, much like a dance team led by a a master. Perhaps best of all, though the game can be challenging, it is still relaxing, something we've really needed in an arcade game. Highly recommended.

NECROMANCER
Magical 1-person combat game for the **64**, by Bill Williams. $35 diskette or cassette.
Synapse, 5221 Central Av., Richmond CA 94804.
Joystick required. 90 day media warranty. DOS-protected, spare copy on back.
Reviewer: Jim Strasma

In **Necromancer**, your task is to grow an army of trees, and march it through a series of vaults into a confrontation with a bad wizard called (of course) the Necromancer. This is a difficult game to figure out, although well worth the effort. In the first screen, you plant trees in defensible positions, and then defend them against ogres and spiders as they grow, using the joystick to aim a magic fireball. If you hit an "eye pod," you get extra seeds to plant. Then, when your strength gives out, you and your adult trees proceed to the second board, in which you attack spider larvae with your trees, by planting them atop their nests. "Hands of Fate" randomly reach down to grab passing trees and drop mystery prizes that help or hinder you. If you make it past all 5 levels of spider vaults, you'll next enter a graveyard, where the Necromancer appears on headstones. Walk over gravestones to remove them, zap the Necromancer (until he reincarnates), and fight all the spiders you missed before (some are now immortal). Talk about involved! Jamie can do it, but can't explain it; you can judge my explanation (my playing is worse). Even so, I like this game. **Necromancer** isn't just another me-too arcade game. Its graphics are unusually good, its music is down-right addictive, and its play action constantly lures you into just one more try. Recommended for fantasy lovers.

PINBALL CONSTRUCTION SET
Pinball simulation for the **64**, by Bill Budge. $40 diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403. 90 day media warranty.
Reviewers: Bill Holt, Jim Strasma

Without a doubt, this is Electronic Art's best-known product, and deservedly so. **Pinball Construction Set** was the first well-known game to allow the user to "think God's thoughts after Him." Apple co-inventor Steven Jobs called it "the greatest program ever written for an 8-bit machine."--no more cursing at the way the author designed the game to work. Think you can do better? Go ahead and try, it's easy. You start with an empty playing field and a "tool kit" containing pinball parts. Just move your joystick to the part you want, and press FIRE to carry it wherever you like. Not enough flippers for your taste? Make some more. Not enough points when you hit the big bumper? Add a bunch. All done? A hammer and scissors move or modify walls and other playfield shapes, and a paint brush colors them. Use the magnifying glass for detailed work, or a screwdriver and pliers to hook up targets for scoring, sound effects, and bonuses. Then test your game until it plays the way you want it to. Save a copy--a real copy that you can give all your friends,

legally. They won't have to buy **Pinball Construction Set** to play, but they may want to, because they'll want to improve your game. Programmability makes all the difference in **PCS.** The world probably doesn't need another good pinball game for the 64, but it does need many more ways to teach people about logic and programming in a way that's fun. **PCS** is all of that, as well as a bridge to art. Like the best graphics programs, it has sketch and zoom modes for drawing in full color, allowing you to design exactly the game desired. That's an awful lot for one game, and even more for one so easy to use. Highly recommended.

Q*BERT
Hopping arcade for the **64.** cartridge.
Parker Brothers, 50 Dunham Rd., Beverly MA 01915 (617/927-7600).
Reviewer: Bill Holt

A great game. A round, two-leg, no arms hose-nose spends his time hopping around a pyramid of colored blocks trying to change them all to a new color while avoiding bouncing balls and a snake and a crab-like thing named Ugg. As you advance to higher levels he has to land on each block two and then three times. An excellent adaptation with hardly anything lost. (They apparently couldn't manage his mumbled swearing when killed, however.) Hold your joystick diagonally with the fire button point up.

RADAR RAT RACE
Maze chase for the **64** or **VIC,** by Hal Laboratories. $5 cartridge.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Joystick optional. Written in machine-language.
Reviewers: John O'Hare, Jim Oldfield, Jr., Jamie and Jim Strasma

Radar Rat Race is, in our opinion, Commodore's best game for VIC (excluding **Jelly Monsters,** a perfect imitation of Pac-man which sold briefly in England.) It is a thinly-disguised version of the arcade car race game, **Rally-X.** In this version you are a mouse, pursued by three rats. Your goal is to eat all the cheese in a large maze before your time runs out, of which you can see only a small portion in overhead view at a time. The rest is shown in a small "radar" display at the side of the screen. Besides three or more pursuing rats, you'll also need to watch out for cats resting along the way. Your only helps are a good supply of magic stars (smoke) with which to confuse your pursuers temporarily, and a radar screen showing mouse rat and cheese locations. Jamie prefers to play without using the "magic stars." Naturally, after you complete the first board there is another (and another), each with a different layout. The action is rapid, the color graphics vivid and detailed. The music is a well-done rendition of the tune "3 Blind Mice", but you'll soon hate it and kick off the sound. The 40 column display of the 64 version improves the screen's playing field, but it reacts and plays same as VIC version. If you like maze games, give this one a try for sure. Highly recommended.

RALLY SPEEDWAY
Road race construction kit for the **64,** by John Anderson. $20 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380.
Requires 1541 disk drive. DOS-protected (thumps). Disclaimer of warranty.
Reviewer: Jim Strasma

Even though he knows I have no use for road race games, Jim Oldfield insisted I review this one. I can see why--it is unique in two important ways. First, you race on a scrolling landscape seen from above. This allows you to race on a huge raceway, but in a different way than competings games that give a behind the driver view. (I prefer overhead, myself.) The second way **Rally Speedway** is unique is that you can construct your own raceways, and specify all their surroundings, a la **Pinball Construction Set.** This works well, and is a most important advantage, because it encourages logical and creative

thinking, rather than merely developing quicker reflexes. **Rally Speedway** also includes all the usual options: 1-2 players, pause, variable top speeds, rates of acceleration and road conditions. It also includes the ability to reset the "best score" to zero, a choice of turning relative to the car's position or relative to the screen, and a special beginners' mode in which you can't crash. I enjoy using the latter mode to drive through swimming pools, over houses, etc., especially since the alternative is to watch the car explode in flames as the driver rolls away, also in flames. Of all the race games Midnite has reviewed, **Rally Speedway** is easily the best. Recommended.

SENTINEL
Startrek-type arcade for the **64**, by Bryan Brandenburg. Diskette.
Synapse, 5221 Central Av., Richmond CA 94804 (415/527-7751)
CBM disk and joystick required. DOS-protected. 90 day media warranty.
Reviewer: Jim Strasma

Sentinel is a very complex, and mildly disguised Startrek--not the arcade game, but the original computer simulation. It includes bases, both yours and the Klingons (under another name), and 3 levels of alien warships. There is also the matter of steering through warps safely, avoiding space debris along the way. To aid you, there are shields, phasors, and torps (under another name), plus the usual vast array of sensors. The prime difference from the old version is the real time arcade action. As a great fan of the original, I found the required haste disconcerting, but recognize it as more realistic. (Besides, there's always the pause button.) The graphics are excellent, and the lead-in music a classic, but you'll be too busy to enjoy either very much. For Trekkies of varying skills, there are 4 skill levels--the bottom one kept me busy. As for problems, there was just one--the game cheats! After finally learning the game enough to play one perfectly--zapping all the enemy base stars, saucers and cruisers, just as I was wiping out the last couple of bottom level enemy fighters, with tons of shields and power left--the game went berserk, and without reporting any damage, refused to track enemy fighters, to show a base even after its coordinates were reached exactly, and generally showed itself to be a sore loser. Though I love all other **Startreks**, and in other respects consider this one the best of all, knowing I can't win fairly keeps me from playing often.

SERPENTINE
Maze chase for the **VIC** or **64**, by Mac Senour of Broderbund Software. Cartridge.
VIC version: $40 from Creative Software, Box 4030, 201 San Antonio Circle, Mountain View CA 94040
Requires joystick. 90 day media warranty. Machine-language. Protected.
64 version: $35 from Broderbund, 1938 - 4th St., San Rafael CA 94901.
For keyboard or joystick. Unlimited free replacement warranty.

Serpentine is one of our personal favorite games, second only to **Choplifter** on the VIC. In it, you are a small snake in a maze. Your task is to stay alive and raise your young. To do this, you'll need to catch an occasional toad for food, and avoid the three larger snakes sharing the maze with you. Snakes being what they are, none of you have any regrets about eating a sister creature or her eggs. Since Frogs are also fond of eggs, it won't do to leave a frog alive when yours are hatching. In fact, since the maze is a bit overcrowded already, and gets more so every time a snake egg hatches, you won't survive at all unless you take drastic action. Drastic action means chewing on the other snakes from the rear. If you succeed at this, you'll eventually reduce them in size to where you can meet them head-on without fear, indicated by a change in their color. Since they tend to grow again if left alive, you'll probably just go ahead and eat them entirely when you can. Someday, after you've played for hours or days, you'll manage to clear the board of snakes entirely, except for your own egg. Then you'll advance to the next level and an entirely different (and more difficult) maze. If you managed to guard your child, you'll also have an extra life. If so, you'll need it, up around the sixth board (the highest we've

reached). An apparent bug in the 64 version makes it take 2 tries to boot on my machine, and prevents starting at all on some 64's unless the SPACE bar is held down (that should be fixed, Broderbund!) You'll love the realistic "hissing" sounds and the very bright and detailed graphics, but the permanently-interesting play action is what you'll come back for, month after month. Though not as involved as some of the newest games, **Serpentine** is still among my favorite games, good for a few quick plays any day. Highly recommended.

SHAMUS
Shoot-out/maze chase for the **64** or **VIC**, by Jack L. Thornton, Jr. and William Mataga.
$40 cartridge (VIC) or $35 diskette (64).
Synapse, 5327 Jacuzzi St., Suite 1, Richmond CA 94804
Requires joystick. 90 day limited warranty. Machine-language. DOS protected on 64.
Reviewer: Jim Strasma

This great game is similar to the arcade game **Berserk**. In **Shamus** you are a sleuth armed with an infinite supply of knives that you can throw, up to three at a time. Your task is to explore a two-story maze of 22 rooms, heavily guarded by a variety of robots, all of which shoot on sight. Complicating your task are electric walls you dare not touch, and a super villain who appears if you stay in one room too long. Although you can stun him momentarily, he'll be back quickly unless you leave the room. Theoretically, he is vulnerable, after you successfully explore both levels of the maze--if you can ever reach the door to the second level. Still, the game is great fun. As you wander, you find things like question marks that may be good or bad for you, flasks that contain an extra life, keys that unlock secret passages, and plenty of shooting and dodging, just like a shamus on TV. The graphics in **Shamus** are excellent--fast-moving, detailed, and colorful. The music, Alfred Hitchcock's theme song in a minor key, is quite interesting--for the first hour. As for improving the game, apart from a mute command, I would only ask for a way to save or pause the game, and a way to vary one's path through the first few rooms. Compared to the VIC version, **64 Shamus** is much easier at the bottom level, has slightly better graphics (though we prefer the ones on the VIC version), far fewer robots per room at first, and is a horror to load (it kept insisting we were stealing it, when we weren't.) One innovation is the pod room, in which you have to shoot a key through a moving keyhole in order to get in, then shoot a dozen or so robots to get through. The 64 version also offers 5 maps and 4 levels, with 38 rooms per level. Shoot the shadow to temporarily freeze him. We're told the answer to the maze is at the bottom of the bottom level, but no one has completed the first level yet. Stick with the VIC version. Overall, the game strikes an excellent balance between strategy and action. Though it is violent, **Shamus** will be a favorite for some time to come. Highly recommended.

SPACE TAXI.
Arcade game for for 1-4 players for the **64.** $30-35 diskette.
Microprose (Muse) Software, 347 Charles St., Baltimore MD 21201.
Reviewer: Jim Oldfield, Jr., David Priess

In this fun and challenging arcade/action game, you are a space-age cabbie delivering people to make your living. But it's tough! Instead of wheels, your taxi has four directional jets to propel you through 24 screens of obstacles and mayhem. The object is to get as much money as you can by ferrying passengers safely from pad to pad and from screen to screen. For delivering the person, you get a basic fare; the quicker you get the passenger to his destination, the higher his tip will be. If you earn $300, you will get an extra taxi (you start with five). There are five levels. One of the best things about this game is that it talks; people say things like "Hey, Taxi!", "Thanks", and "Pad 2, please" throughout the game. **Space Taxi** provides for lots of enjoyment at a good price. An excellent game with great animation. Recommended.

SPARE CHANGE
Coin-gathering arcade for the **64**, by Dan & Mike Zeller. Diskette.
Broderbund, 1938 Fourth St., San Rafael CA 94901 (415/6424).
DOS-protected.
Reviewer: Jim Strasma

Spare Change is a fairly simple arcade game, and also fairly wholesome. In it you scrounge for quarters to put in your coin collection, while two computer opponents scrounge for the same quarters to put in their piggy bank. The places you all look are in change machines and pay phones, but you have an advantage--you can also get dollar bills from a cash register to feed the change machines the way they were designed to work, and if the cash register runs out, you can get more money from a safe. You may also feed quarters to a juke box, which makes your opponents stop scrounging for quarters and start dancing for a while. Sound easy? Don't forget that there are two of them and only one of you. Jamie mastered this program in an afternoon, but I'm still trying. Recommended.

SURVIVOR
Alien shoot-out for the **64**, by Richard Carr. $35 diskette or cassette.
Synapse, 5327 Jacuzzi St., Suite 1, Richmond CA 94804
Requires 1541 disk or Datasette, and joystick.
90 day media warranty. Machine-language. DOS protected.
Reviewer: Jim Strasma

Survivor is the only arcade game we've seen that allows two people to play at once and on the same side, but that isn't all that's good about **Survivor**. Your tiny ship is up against 4 space forts with their ships and guns. Touching any of them or any of the numerous asteroids costs you one of your 3 chances. Fortunately, your gun shoots farther than theirs, and you have a few smart bombs to clear the screen of enemy ships. To destroy a fort, you have to first destroy all its guns, by shooting out enough of its armour to get a clear shot. As you might expect, winning takes longer than losing. You might survive long enough to finish level one (of 8), if you have a friend assist you. When two joysticks are connected, one player is the pilot and the other is the gunner. Two other helpful options are a key that continuously fire your guns and a key that gives you instant control over your direction. (Normally you accelerate and decelerate gradually like real spacecraft.) The graphics are superb and the sound is well done, especially during the introduction. The play action has the flavor of arcade action, but allows you to take enough time to avoid excess stress. My only complaint is with the manual--it's simply borrowed from the Atari version, with a sheet of corrections for the Commodore. Highly recommended.

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SYNOPSIS

Tactical games test your logic and challenge your thinking. These games include traditional strategy board games, sports simulations and real-life simulations.

DESCRIPTION:

Tactical or strategy games are for deep thinkers, rather than the quick-witted. They include simulations of real-life games like football and baseball, as well as such traditional board games as Chess, Othello, and Monopoly, as well as several less historical games. **Quality in these games has more to do with skill than beauty.** Although it is nice when such games have colorful and detailed board displays, and appropriate sounds, it is far better when they play well and quickly--but not necessarily too well. For instance, it's hard to enjoy a game of computer checkers now that the U.S. checkers champion has been defeated by a computer. Similarly, at least one Othello game for Commodore's larger models has never been defeated by a human at its top level of play. Such skill is depressing rather than challenging, but would be even more depressing if programs deliberately did less than their best to give the player a chance.

WHAT TO LOOK FOR (CHARACTERISTICS)

The best solution is for a game to play at different levels, improving moves when given more time to think about them, but honesting trying to defeat me in any allotted time. Most chess games use this time limit concept, just like real tournament chess. **At a beginning level they move like lightning, but lack time to see traps an able opponent sets for them. Another approach** that allows beginners to win a few games **has the computer start out fairly ignorant, but able to learn from its mistakes, never making the same mistake twice.** The game of Nim, for example, is a most frustrating game to play against a computer, because the computer knows a simple formula to follow to win. In Android Nim (in the public domain), however, the computer doesn't know the formula, and has to learn from its mistakes. **There is,** however, **one time when maximum performance is needed--when two computers are set to play against each other. This can be most instructive to watch,** and any good program should be able to be set to play either position.

Some tactical games give hints on request, let you take back bad moves, or let you set up special situations. **Some games let two or more humans play, with the computer handling the calculations and movements.** The Public Domain version of "Monopoly" on the 64 does this. If a game is lengthy, a great feature is to **pause or to save it,** to finish another time. If time matters, it's also nice for the game to **display a clock, or to save old moves,** to analyze or send to friends.

CHECKERS V2.1

Checkers simulation board game for the **64,** by David Slate. Diskette.
Odesta, 930 Pitner, Evanston IL 60202.
Requires 1541 disk. Printer, joystick or paddles optional.
DOS-protected (no thump). 90 day free replacement warranty.
Reviewer: Jim Strasma

Though not as complex as chess, checkers is a very challenging game, and its human champions are very skilled. Nonetheless, Odesta reports this program was able to win at least one game against the U.S. champion. Therefore, don't buy this program thinking you're going to whip it. You won't. In fact it put Jamie away in less than 5 minutes on its lowest level. The real value is in its many options, which include tactical advice, set up board positions, varying skill levels in machine vs. machine play, a record of all moves made, with a "movie" option to replay the game, replay last move, and such typical options as beeps on and off. If you want to learn how to play checkers, Odesta will be glad to teach you, without embarrassing you in front of anyone but your 64. Recommended.

CHESS 7.Ø
Chess simulation board game for the **64.** $7Ø diskette.
Odesta, 93Ø Pitner, Evanston IL 6Ø2Ø2.
Requires keyboard or paddles. DOS protected. 9Ø day media warranty.
Reviewers: Jim Oldfield, Jim Strasma

This is the best chess program for the 64, especially with Datamost no longer making **Mychess II** available. Set up in the standard two-dimensional board game of row-column notation, it has a library of 7,ØØØ opening moves, and 17 levels of play. (Jim Oldfield is still on level 1.) You can re-enact 3Ø pre-selected chess games famous people have played, or play one of the built-in variations of blindfold chess. Watch out! The computer plays a very aggressive game. It even gives you advice while playing. Its excellent manual descibes some of the greatest players and their strategies, along with a history of chess. **Chess 7.Ø** is as close to having your own chess tutor as you can get on a microcomputer.

COMPUTER FOOTBALL STRATEGY
Football simulation for the **64.** $2Ø cassette.
Avalon Hill, 4517 Harford Rd., Baltimore MD 21214
Requires Datasette. Will replace defective software. BASIC. Unprotected.
Reviewer: Jim Strasma

No football fanatic will pass up **Computer Football Strategy.** The graphics are merely adequate (only 2 players visible per team), and the sounds are minimal, but true fans won't mind. They'll just appreciate all the strategic options offered in this new simulation -- plenty for both offense and defense. You can even check the statistics. As for opponents, you can play a friend or the computer or watch the computer play against itself. Unfortunately, no real teams are included. The biggest annoyance is that you have to hit the RETURN key all day. Here's a hint for armchair quarterbacks: the computer is a sucker for a pass on the first down. If you love football, you'll probably like this game.

CRUSH, CRUMBLE AND CHOMP
Graphic monster strategy for the **VIC** or **64,** by J. W. Connelley.
$3Ø diskette (64) or cassette (VIC).
Epyx, Box 4247, Mountain View CA 94Ø4Ø (415/964-8Ø21)
Requires 1541 disk drive or Datasette. 3Ø day media warranty. BASIC. Protected.
Reviewer: Joe Allain, Jim Strasma

Have you ever cheered the monsters instead of the humans in a movie? If so, here's your game. Forget justice and ecology for the moment. Your job is to **Crush, Crumble and Chomp** your choice of four of the best-known cities in the world. And who are you? Again it's up to you--today Godzilla, tomorrow Mechismo, and in days to come four other movie greats. In the disk version, you can grow your own monsters and save games for instant replay, not to mention avoiding the endless wait for the program to load. What can monsters do? Just the usual--breathe fire, fly, atomize buildings, eat people, scream, crush bridges and swat helicopters, to name a few of the better stunts. These actions will draw the attentions of the police and later the army, but so what? The only things to watch are fuel and ammo dumps, the power plant, mad scientists and sometimes hunger. The playing field of 64 squares is one sixteenth of the city you invade. As you move, new sections of the city come into view. The color graphics are fairly realistic, and the sounds quite good (it has a beep to move). The action is a bit slow, but that's normal for a tactical game. As usual for Epyx, the manual is outstanding, including full details on your setting and options; our son once requested it as his bedtime story. The 64 diskette version lets you define your own monster, while the VIC cassette version takes forever to load. This isn't a game you'll play every night, or even every week, but you'll be glad you bought it. Recommended if you read well and like strategy games and monster movies.

INTERNATIONAL SOCCER

Soccer simulation game for the **64.** Diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Reviewer: Fred Sidener

International Soccer is a fast paced action game for both kids and adults. The animated players take on a cartoon-like appearance when viewed for the first time. The action is somewhat slow at level one or two but picks up dramatically at advanced levels. The color and background noise provided by the spectators is a welcome change from the conventional shoot-em-ups! Recommended for the whole family.

MONOPOLY

Monopoly board game for 2 players for the **CBM/PET** or **64**, by John O'Hare.
Public domain diskette, available from user groups.
Requires 1541 disk drive or datasette. No warranty. Written in BASIC. Exchangeable.
Reviewer: Jim Strasma

This computer simulation of the popular board game, **Monopoly**, is in the public domain. Unscrupulous people have put their own names on it, renamed it, and sold it, but the author wants it to be exchanged. In this **Monopoly**, two people play against each other, with the computer acting as an assistant to both. The computer draws the board, helps roll the dice and moves the pieces. It also acts as banker and umpire. Certain special events, such as going to jail also get a special display of sound and graphics. With the computer's help, **Monopoly** games go very quickly; they are also far easier for very young players. The only options are an "auction" rule for properties landed on but not bought, and a "free parking jackpot" option which decides whether accumulated fines get returned to those landing on the free parking square. This is an excellent program. Naturally it has sound, and excellent color (the only thing visibly added by those newly claiming copyright in the American Peripherals 64 version). Its play is entirely realistic and its color display has to be seen to be believed. Our 6 year old son, Jamie, taught himself to play the board game after trying this version a few times; now he's a formidable opponent! If you like tactical games, you need **Monopoly.** Highly recommended.

M.U.L.E.

Economic simulation game for 4 players for the **64.** $40 diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403.
Reviewers: Randy Chase, Len Lindsay, Jim Strasma

M.U.L.E. is a fantastic game of colonization for those who thrive on econimic simulations. It presents some old ideas mixed with a few new twists in a very entertaining manner. It is always a 4-player game that supplements you with automated opponents. The common goal is that the colony will survive and proper. The personal goal is that you will survive and prosper more. Electronic Arts has added many features and twists that make this not only a very enjoyable game, but also a fascinating study in the economics of supply and demand. Random acts of fate can be expected, but they aren't as random as you first thought. Fate will always be positive for the fourth place player, while the winning player will never get lucky. The music is about the best Len Lindsay has heard in any 64 game, and the graphics are excellent. As for its "playability," it is Rhianon Lindsay's favorite game (Len's 6-year-old daughter). This is without a doubt the most fascinating and captivating multi-player game Randy Chase has played, and the documentation is not only detailed and easy to use, but also entertaining to read. Personally, bartering is something Jim Strasma hates, and there's little else TO do in **M.U.L.E.** The time delays seemed eternal, and the play hopelessing confusing without more study than the game was worth. Therefore, neither Jamie nor Jim were a bit sad to see it go.

MONTY PLAYS SCRABBLE
Word strategy game for the **64**, by Leisure Genius. Diskette.
Epyx, 1043 Kiel Ct., Sunnyvale CA 94089
Requires CBM disk drive. DOS-protected.
Reviewer: Jim Strasma

Are you a Scrabble freak who can't find a willing partner when you want to play? Monty is always ready, plays well, and will even let you cheat if you insist. Monty gives a good graphic display of the standard Scrabble board and tiles, and makes typical play fairly easy. However, unless you already know which colors stand for what on the board, it will help to have a real board handy. Up to 3 people or alternate machine personalities can play along with Monty. Besides the pleasure of always having a ready partner, **Monty plays Scrabble** can also assist you in learning to play better against human partners. If you wish, you may watch Monty "think," and spy on his choice of letters, or request a hint when it is your turn. Although Scrabble is not normally an exciting game, it can be very engrossing and a good one for families, because it helps children build their vocabularies and improve their spelling. Since it is largely based on letter and word values, it is also a natural for automation. Recommended.

ON-COURT TENNIS
Tennis simulation game for the **64**. $35 diskette.
Gamestar Software, 1302 State St., Santa Barbara CA 93101 (805/963-3487)
Requires 1-2 joysticks. Machine-language. DOS protected. 90 day media warranty.
Reviewer: Jim Oldfield

On-Court Tennis is one of the best sports simulations created so far--as close as you can get to real tennis on a microcomputer. The computer can play 4 of the greatest tennis players or a person. You can play 2 out of 3 sets, 3 out of 5 sets, or just practice. The game uses 3-dimensional "player-perspective" graphics, and the mechanics of game play are excellent. You can do slams, backhands, forehands, and there's even a shadow on the ball to see where it's heading. [Hint: You should rely more on timing and swing than on running your little man around the screen during play.] Recommended.

ONE-ON-ONE
Basketball simulation game for 1-2 players for the **64**. $40 diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403.
Requires 1-2 joysticks. 90 day warranty. DOS-protected (1541 only). 4 levels of play.
Reviewers: Todd McDonald, Patrick Condon, Mike Stout

Larry Bird and Dr. J face other on the court in this amazing basketball simulation game. Their playing styles are really different; for instance, Bird tends to be better on long shots while Dr J is a better slam dunker. Everything about this basketball game is really nice--graphics, sound and realism. The excellent graphics are best displayed when a player slam dunks a little too hard. A shattered backboard comes crashing down on the floor; then a little old robot janitor comes out and cleans up, while chewing out the guilty player in a language all his own. As for realism, **One-On-One** includes fatigue lines at the bottom of the screen (your play slows down as you get tired), hot and cold streaks, a shot clock (you have only 24 seconds to shoot), and instant replays if you make a really good shot. It is also full of surprises, like a referee that calls fouls like hacking and reaching in (but is more lenient in the lower "Park and Rec" level of play), and a 234 second violation if you go to shoot the ball and touch ground before you shoot. You can pause the game for dinner, play or replay in slow motion, call time out, and even improve your REAL basketball game by reading the tips on defense and offense in the 16-page manual. One secret Todd McDonald found was that after you shoot the ball, start running for the basket to make the rebound and try again. You can play to a preset score, or play timed quarters. Patrick Condon hasn't tired of this game in over a month of daily play and thinks it's the best sports game yet. Recommended.

RINGSIDE SEAT

Boxing simulation for the **64**, by Carl Saracini. $40 diskette.
Strategic Simulations, 883 Stierlin Road, Bldg. A-200, Fresno CA 94043-1983
Requires 1541 disk drive. 30 day replacement warranty. Written in BASIC.
Reviewer: Jim Oldfield, Jr., Jim Strasma

In this boxing game of **Ringside Seat**, you manage 51 of the greatest fighters of all time, from all weight classes, and even choose their fighting strategies. Pictured in the center of your screen are the two silouettes of boxers going at each other, as seen from a back row seat at a fight. There's color commentary and a blow by blow description of the fight (in upper case letters only) as it is going on, including the cuts each fighter receives during the bout. **Ringside Seat** takes into account around 40 different variables about each boxer to make a fight as realistic as possible. Try recreating a fight between Marciano and Louis, for instance. Or, for vanity's sake, create a boxer in your own image and fight the heavyweights yourself! You may play computer against computer, computer against you, or two people. You can even be the third judge of the match! Furthermore, you choose strategy each round, and sometimes within rounds. Choose from seven strategies, from Fight flat-footed, to Go for the knock-out, with Cover up, Charge in, Stay away and Protect cuts as other alternatives. By entering your own fighter, you can rate many categories, including weight, fight style, various abilities, aggressiveness, and percentage of time he does various things. The manual is brief and glossy, but the type is too small for easy reading. The graphics are unimpressive, except that the visuals do match the descriptions. Loading time is quite noticeable; it takes around six minutes to set up a fight. Still, if you like boxing, here's your salvation. **Ringside Seat** is by far the best sports simulation available on a personal computer, but could be improved.

SARGON III

Chess game for the **CBM/PET, 64** or **VIC**, by Dan & Kathy Spracklen. $40 cartridge.
Commodore, 1200 Wilson Dr., West Chester PA 19380
Joystick optional. No stated warranty. Written in machine-language.
Reviewers: John O'Hare, Jim Strasma

Any chess program should play a challenging and legal game of chess. More important is whether the human player enjoys and learns from the experience. **Sargon II** set this standard several years ago as the best chess program for home computers on several brands, including the PET/CBM; the VIC version is still a very strong game. The VIC version of **Sargon** has an excellent graphic representation of the standard chess board and its pieces, with levels to challenge just about anyone. Additional features suggest your best move, position the screen, and change screen colors. The mechanics of playing this computer version of chess are very easy to follow, and all that seems to be lacking is a chess clock, like the one built-into the screen display of **Microchess**. In one test, we set up **Sargon** to play the prior PET chess king, **Microchess**. With **Sargon** at level 0 of 6, and **Microchess** at level 8 out of 8, they played about evenly. When **Sargon** was raised to level 1, it wiped **Microchess** out in very short order. Level 6 takes forever to play, but that won't matter unless you can beat it at lower levels. Level 4 will beat an 1100-rated chess player, largely because humans get tired of waiting for it to move. At level 0, it can be beaten in 4 moves. If you enjoy chess, you need this cartridge, especially if you haven't bought a cassette drive or disk drive for your VIC yet. Recommended.

SUMMER GAMES.
Olympic games simulation for the **64.** diskette.
Epyx, 1043 Kiel Ct., Sunnyvale CA 94089.
Protected. Uses 2 joysticks.
Reviewers: Julie Hyland, Casey & Rich Westerman

Summer Games is a pretty good collection of sport simulation games, including skeet shooting, freestyle swimming, and a number of other events. It even lets you see the opening ceremonies! Casey Westerman's favorite event is Gymnastics, but you can run, swim, jump, shoot, or dive, and so on. You get to practice or play the part of 18 different countries. You can compete against each other or against a computer pacer. You use the joystick in every direction possible. Is it easy!? Not unless you read the manual for all the joystick options, and then Julie Hyland wishes you luck. There are some great animated graphics, with lots of music, too, in the form of the winning contestant's national anthems, which are played as national flags are displayed--and that's my gripe with the game. Rich Westerman feels that if we've learned anything from the political fiascos surrounding the last several Olympic Games, it should be that all the flags, uniforms, and idealogical hooey should be left back home.

WORMS?
Snake game for the **64.** $35 diskette.
Electronic Arts, 2755 Campus Dr.,
San Mateo CA 94403.
90 day media warranty.
Reviewer: Jim Strasma

In this unusual game your goal is to train from 1 to 4 worms to capture territory by following instructions you give them in advance. As they travel, the worms leave colorful trails and make various noises. The lucky worm that completes the last trail to a point on the screen wins that point. The unlucky worms that go for the same last trail at once both die, for lack of a way out. Like **Moondust,** which it slightly resembles, **Worms?** can either be played as a serious game (for 1-4 players) or it may simply be tinkered with and enjoyed for the beauty of the patterns that develop in the course of a game. There are also some automated options: worms that are taught by the computer through the course of the game, worms that move at random, and a demo worm loaded from disk. If, during a game, you develop an especially wise worm, you may likewise preserve it for anoher day by storing it to disk. The package is colorful, and the instructions clear and brief. Like other good games, it is quickly learned but slowly mastered, and playable by a wide variety of ages. Better yet, it is one of the very few computer games that don't involve either killing or chasing, and one of the even smaller group of games that help teach the concepts of logic and programming. Recommended.

Why spend $150 on software for a $200 computer? No reason.

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Intelligent Software
Box 3745-M, San Rafael, CA 94912

SYNOPSIS

These programs have to be in the computer's memory for another program to run. They include assemblers (for writing machine-language programs), compilers (to speed up and encrypt slower high-level language programs, such as those written in BASIC), and other high level languages (fancier BASIC, plus COBOL, COMAL, FORTH, LOGO, Pascal, and Pilot).

WHAT LANGUAGES DO

One of the best features of the Commodore 64 is its large memory, enough to completely strip away the built-in BASIC and substitute another powerful language. Although I personally am quite **satisfied with BASIC** for nearly all purposes, it is human nature to always look for a "better" language. With Commodore computers, you can enjoy any of several computer languages. At the moment these include **Pilot** (an educational language), **LOGO** (newly popular in schools), **FORTH** (small and fast), **Pascal** (some academics prefer it to BASIC), **COMAL** (a hybrid of the best from BASIC and Pascal), **FORTRAN** (a traditional language best suited for math and science applications), and **COBOL** (by far the most important language in business programming), with others being introduced all the time.

In addition to true languages, this section **also includes compilers,** and **assemblers.** Anyone who creates BASIC programs eventually writes a long enough program that it takes forever to run. One way to speed things up is to rewrite in machine language. However, fewer than one out of a 100 computer users ever learn to program in assembly or machine-language. A far easier solution is to compile the program. This is a process of translating BASIC into a faster machine-language equivalent. But if you have learned BASIC well, and are tired of constantly running up against its many limits, a good assembler can lead you into a new world of speed and power. It will also lead you into undreamed-of worlds of frustration. Until you try to live without it, you won't believe how much BASIC protects you from your own mistakes. Still, if you need more speed and power, you'll have to learn to use an assembler.

WHAT TO LOOK FOR (CHARACTERISTICS)

In each case, the **best marks go to language implementations and tools that do the most, do it closest to the way that language or tool is officially supposed to work, and do it the usual way things are done on Commodore computers.** Although we have tried not to rate one language as better or worse than another in theory, **in practice some are more suited to a particular model than others.** For instance, FORTH is supposed to have a 64-column screen. To score at the top, it still should have that, even on the VIC with its normal screen limit of 22 columns. But in general any FORTH is worth a bit more on the VIC, with its limited memory, than on the 64, where memory is cheap.

As with programming aids, **languages ought not to be protected against copying.** They are used too often to be worrying about the condition of the only diskette one has, or how they will respond to a creative error.

BLITZ

Compiler for the **64.** $99 diskette.
Skyles Electric Works, 231 E. South Whisman Rd., Mountain View CA 94041.
Supports 1-2 disk drives.
Reviewer: John R. Olsen, Jr.

Written in Germany, **Blitz** is a two-pass compiler (it scans your BASIC program twice while compiling it into P-code). **Blitz** compiles a program faster and in more compact code than **Petspeed.** Both will compile "off-the-shelf" programs without having to modify the code. In addition, **Blitz** will allow BASIC extensions and permits the use of integer variables! **Blitz** also uses a smaller run-time library: **Blitz** uses a 23 block library, while **Petspeed** uses one 33 block library. When John Olsen compiled a 60-block test

program using both compilers, **Petspeed** filled 96 blocks in 26 minutes, and **Blitz** filled only 74 blocks in 12 minutes. In comparing **Petspeed, Instaspeed, JOU Compiler, BASM and Blitz,** Olsen liked **Blitz,** with **Petspeed** a close second.

COMAL .14 & 2.00
Structured language for the **64** or **CBM/PET/SuperPET,** by UNI COMAL.
$15 diskette (0.14 version), or $102-132 cartridge (version 2.01).
COMAL Users Group, U.S.A., Ltd., 5501 Groveland Terrace, Madison WI 53716
Requires CBM disk drive. Printer optional. Machine-language. Unprotected.
Reviewers: Mark Brown, Nolan Brown, Keith Grigg, Tom Lynch, Mark Niggeman, Jim Strasma, Loren Wright

COMAL is a fairly new language from Denmark, incorporating the best features from BASIC and Pascal. It has attracted a lot of attention and has a large following through the COMAL Users Group. Not only is it five times faster than **BASIC** (on average), it is also much more powerful and yet easier to learn. It includes all the program structures recommended for professional programming, and does an immediate grammar (syntax) check as each line is typed, to prevent nasty surprise errors later. All structures are automatically indented when listed. Many **Toolkit** type commands such as AUTO, and RENUM are built-in. Programs have 10K of free memory on diskette (version 0.14), 30K free on cartridge (version 2.01).

0.14 version: The diskette version takes full advantage of the graphic skills of the 64. It has high level commands for sprites and complete hi-res "LOGO" TURTLE graphics commands. Many LOGO programs can be effortlessly converted to work in COMAL.

Version 2.01: The cartridge contains 4 EPROMs with 64K of code and enough bank-switching circuitry to take up only 16K of the 64's address space. However, this version has no empty ROM socket to use to automatically boot application programs when the system was powered on. COMAL 2.0 adds many features to the disk-based 0.14 COMAL: System, Paddle, Joystick, Lightpen, and most particularly, Sound and Font. Sound allows full, convenient control of all SID chip features. Font allows user-defined characters. One very powerful feature is that both the sprite and sound systems can be programmed to run on interrupts. For sound, you can play 3-voice music in the background, while the program does something else; special commands control when the different voices start and stop. Sprites can also continue in the background, complete with programmed pauses and collision detection.

Much has been added to make this COMAL version match the official COMAL standard, such as Loop...Exit...Endloop, Print At, Print Using, Input At, and a Trap/Handler system to handle errors. The powerful PROCedure is even more powerful in 2.01: PROC's can be nested; they can have string names (therefore returning strings as results); they can be CLOSED except for certain selected IMPORT variables (0.14 allows CLOSED only, without the IMPORT option); and most importantly, with EXTERNAL you can call a procedure, complete with parameters, from the disk, execute it, and then discard it. For instance, you could have a powerful sort routine on disk, and call the procedure from applications, using an array in the parameter list. The array passed in the parameter list would get sorted, while eliminating the lines of the sort routine. You can also improve the sort routine w/o changing it in all the programs that use it. The AUTO command is more intelligent, allowing you to cursor-up to a previous line, make a change, and then continue. Also, if the AUTO sequence causes you to start overwriting previously programmed lines, the system warns you by printing the line number in reverse-field. RENUM will allow you to renumber just the remainder of a program. The LIST command lets you name a procedure or a function, instead of guessing what the actual line numbers might be. The COMAL cartridge makes programming considerably easier, and allows many things impossible in BASIC. The price is very reasonable for the added power, but well over half the cost of a 64. Developers are not likely to write much for COMAL-cartidge systems, unless someone develops a run-time package that allows cartridge programs to run without the cartridge. If you are not sure whether you want to make such a large investment, get the 0.14 version first.

C-64 FORTH (PMMM)
Threaded language for the **64.** $1ØØ diskette.
Performance Micro Products, 77Ø Dedham St., S-2, Canton MA Ø2Ø21
Requires CBM disk drive. Printer optional.
9Ø day media warranty. Written in machine-language and FORTH. Unprotected.
Reviewer: Jim Strasma

If you like Hewlett Packard calculators, you'll love FORTH. Each is designed for the highest possible efficiency and autonomy of approach. FORTH in particular is the fastest and most compact of the so-called "high level" languages (languages that are highly removed from actual machine-language). The FORTH language is important to people who need very small and very rapid programs. In return for these benefits, its users put up with a programming environment that is not much easier to use than an assembler, and lacks some of the commands needed in writing easily-maintained "structured" programs. Although it is possible to write FORTH programs so they will make sense to others who read them later, this is rarely done. Performance Micro has created a good implementation of FORTH-79 for the 64. It also includes extensions for simple and high-resolution graphics, sprites, and multi-voice sound, and to easily get information in and out of the machine. Its screen editor is similar to but better than BASIC's. For those interested in mingling FORTH and machine-language, it includes an assembler. On the other hand, PMM's **C-64 FORTH** is slightly weak in the way it handles "screens." (Think of them as program listings.) It stores them as sequential files, rather than the traditional relative files. It also defines a screen as 25-1/2 4Ø (or 8Ø) column lines, rather than FORTH's normal 16 lines of 64 characters, and its last half line is difficult to access. The traditional FORTH weaknesses in decimal math, higher math functions, and string-handling remain. The manual is a joy to behold. It is the first one we've found that makes any sense to those who don't already know FORTH. It recognizes that many buyers do know something about BASIC, and gives helpful comparisons between the two languages. It also uses readable examples. Even so, FORTH is not an easy first language, and parts of even this excellent manual will be rough sledding for novices. **C-64 FORTH** is one of the best implementations of FORTH, especially for experienced programmers.

LOGO
Graphic and list-processing language for the **64,** by Terrapin. $6Ø diskette.
Commodore, 12ØØ Wilson Dr., West Chester PA 19380 (8ØØ/662-2444)
Requires 1541 disk drive. Written in machine-language. DOS protected.
Reviewer: Jim Strasma

Logo is best known as a language in which a small object called a turtle is directed around the screen by simple commands. The turtle's path is usually marked by a thin line, forming pictures as the turtle moves. This ability has made it a favorite with children. According to noted educator Sidney Papert, **Logo** should replace BASIC as the first computer language taught in schools. He and others feel its simple but powerful drawing ability is a painless way to introduce children to logical thinking, math, and computer programming.

Commodore's Logo is a full implementation of the **Terrapin Logo** language, similar to but expanded from the Apple version. Actually, **Logo** is much more than turtle graphics; it also includes most features from the powerful list-processing language LISP. (This means, among other things, that it can handle an entire list of things as easily as other languages handle single items.) **Logo** is especially suited for work with artificial intelligence (computers and robots that "think") and also surprisingly useful for general-purpose programming. An excellent demo disk included with the package shows the range of possibilities. It contains some 5Ø programs, including a program that generates messages to write on postcards, one that converts sentences into pig latin, the song "Twinkle, Twinkle, Little Star", an adventure game, and a utility to convert from any number base to any other number base. **Logo** works by defining words, and then using those words to define other words, as in the FORTH language. The resulting dictionary can be saved for future use. Cursor controls still work, and well, but a bit differently than in

most Commodore programs. Program lines and variable names of any length are allowed, but spaces must be placed just so. To use a new word, just enter it, followed by the contents of any variables needed. If you are drawing, it is simple to see either your program or the picture, or both, with the press of a key. Those who don't type well will be glad to know that several keywords may be abbreviated, although doing so makes programs confusing to new users. There is even an "Instant" version of **Logo** included, with only eight simple commands to remember. Various "debugging" (error-trapping) commands also help clear up any confusion, by showing exactly what a program is doing, one step at a time. Overall, this is a better-structured and more powerful language than BASIC that is simpler to use. It is also an excellent aid to using the 64's powerful graphics abilities. Anyone interested in programming, whether child or adult, will find **Logo** an excellent purchase. But do buy two copies of the program diskette, since you can't get a spare.

THE MACHINE SHOP

Macro-assembler, editor, symbolic disassembler and debugger and cross reference for the **64**, by Don French & John Shifflet. $50 diskette.
French Silk, Box 7096, Minneapolis MN 55407 (800/328-0145).
Requires 1541 disk drive. Printer optional.
DOS-protected, backup $20. 90 day free replacement warranty. BASIC plus machine language.

The Machine Shop comes on two diskettes, labeled Develop-64 (V4.6) and Decode-64. Together, they provide some features for assembly language programming available nowhere else in the Commodore world. Develop's major features include conditional assembly, macro's, library files, syntax checking on entry, a single-stepping debugger with both "break" and "go" points, and the only easily-readable manual we've seen for a 64 assembler. (Marvin DeJong's advanced assembly language programming text also uses Develop 64 for its examples.) This new version came as a pleasant surprise. It is both more powerful and more standardized than earlier versions. Though such competitors as MAE and PAL can match many other features, neither can match the **Machine Shop**'s decoder. Decode-64 is, along with an excellent symbolic disassembler from Schnedler systems we're reviewing now, the first major improvement in Commodore machine language development we've seen since **Micromon.** They complete work Bill Seiler and Jim Strasma began with **CBM, MAE,** and **PAL** unassemblers years ago. Both programs disassemble an unknown object program into source code that can be altered and reassembled. However, they go beyond early efforts, both in ease of use and in power. One enhancement in Decode 64 is its ability to unassemble a disk file. Another is its ability to include standard labels. Third, it generates a cross reference of all addresses referring to other addresses, and sorts it in 3 useful ways. Most important of all, you can use all this information when testing an assembled machine language program. Its single stepper shows the unassembled source code, rather than the usual disassembly. This is a real step forward, unrelated to anything else we've seen in the Commodore world, and long needed.

The Machine Shop is also a good choice for beginners who want a menu-oriented approach to writing machine language programs. Even advanced users will enjoy its speed at assembling and the time it saves by pre-checking your source code as you write it. A primary concern about the **Machine Shop** is that unlike the competitors listed above, it is copy and list-protected, undesirable features for any programmer's' tool. If you will use it often, be sure to get a spare diskette. Though the program is generally reliable, it does crash if you try to alter a ROM. At its current price and with all its features, the **Machine Shop** should be very attractive to beginners and experts alike. If it were also available in a listable and unprotected version (perhaps at a higher price, like Borland's "Sidekick" on the PC), it might even replace **MAE** and **PAL** as the standard Commodore assemblers. Until then, we can't give up either for it, but intend to use the **Machine Shop** right alongside them, taking full advantage of its added power and ease of use.

MAE 3.Ø (Macro Assembler and Editor)
Macro-assembler for **all Commodore computers**, by Carl Moser. $4Ø diskette.
Eastern House Software, 3239 Linda Dr., Winston Salem NC 27106 (919/924-2889)
Requires CBM disk drive.
Full warranty. Written in machine-language. Unprotected. User group support.
Reviewer: Jim Strasma

Among assembly-language programming sytems, **MAE 3.Ø** (Macro Assembler and Editor is unique in providing an Assembler, an Editor, an extended machine-language monitor and a Word Processor--all of which can work quite well together and with BASIC at once. The editor is easier to use and more powerful than any other currently available. With provided add-ons, it is also one of the better word processors available. Eastern House Software is also one of the most helpful companies around. Our only complaint related to learning is that the otherwise adequate manual needs an index and a quick-reference section. **MAE 3.Ø** also provides several advanced features, including interactive assembly, control files, and Macros. (By the time you need these, you'll know what they are.) It's other great advantage is that an identical version is available for all other popular 65Ø2-based microcomputers, including Apple and Atari. This makes its files the easiest of all to adapt to other brands. Recommended.

OXFORD PASCAL
Structured language for the **64**, by Niklaus Wirth. $5Ø diskette (64)/$3Ø cassette (VIC).
Oxford Computer Systems, Hensington Rd., Woodstock Oxford, ØX7 1JR England
Reviewers: David Myers, Jim Strasma

Oxford Pascal is a superset of ISO standard Pascal. It has the features expected in a complete Pascal, plus a number of extensions. It is a p-code compiler, and in benchmarks, runs at least twice as fast as interpreted BASIC. The documentation says Oxford can handle 6ØØØ line Pascal programs without chaining (not tested). You can test and compile a procedure (subroutine), and later link it to a larger program. Oxford programs are normally run from the Oxford editor, but you can make a program run from BASIC with the Locate command, [which] does clear any source from the editor. In the one check of this file type, it added 11K of code. Resident programs, compiled programs and BASIC runnable programs appear to have the same execution time. Who would have expected so professional a Pascal implementation on a home computer? The documentation is potentially good, but full of typographical errors. Otherwise, this version of Pascal is wholeheartedly recommended. One warning: we are hearing numerous reports of fatal crashes in use. Be sure you get the latest version, and a promise to fix any lingering bugs.

PAL
Assembler for the **CBM/PET** or **64**, by Brad Templeton. $1ØØ diskette.
Pro-Line Software, 755 The Queensway East, Unit 8, Mississauga, ONT L4Y 4C5 CANADA
Requires CBM disk drive. Printer optional.
Unstated warranty. Written in machine-language. Unprotected.
Reviewer: Jim Strasma

PAL (Personal Assembler Language) does for 65Ø2 assembly language programming what a programmer's aid does for BASIC programming. To paraphrase the **PAL** manual, "the essential purpose of an assembler is to help you separate your program from machine code as much as possible while still allowing full control of the machine." An assembler lets you write programs using easily-remembered symbols, and modify them without difficulty. Then, when you are done, it translates your work into the actual codes used by the machine. You won't need an assembler at all until you are interested in writing your own machine-language programs. Then, after once using one, you'll wonder how you ever got along without it. **Pal** is simple in concept, extremely flexible in use and extremely powerful in skilled hands. It comes as a small program that can be moved anywhere in computer memory, and works well with **Power** if you have both. Its capacity is very large--most programs will fit

in memory all at once. This makes changing programs much easier than when they are split into several files. **PAL** is also faster than any other assembler we've used. Its syntax is like the CBM assembler, but its files are stored as ordinary BASIC. The manual isn't for beginners, but is readable. One of our free programs included with **PAL** rapidly recreates assembler source code from large machine-language programs; another included program by us allows **PAL** to use files from other assemblers. For the experienced programmer, **PAL** has the usual amenities, such as conditional assembly and relocatable object files. It lacks macro's, but its real weakness is the appearance of its source files when listed. They are very difficult to read except when printed on a printer during assembly. **PAL** is a latecomer among assemblers and no longer a bargain, but those who do have it (including some of the best-known programmers), use it regularly and love it. Recommended.

PETSPEED
BASIC compiler for the **CBM/PET** or **64**, by Oxford Computers. $150 diskette.
Oxford Computer Systems, Hensington Rd., Woodstock Oxford, ØX7 1JR England
Requires CBM disk drive. Works with Interpod IEEE-488 interface.
No stated warranty. Written in machine-language. Joystick port 1 dongle.
Reviewers: Gary Huff, Jim Strasma

We in North America are the only ones on the planet who cannot enjoy using **Petspeed.** The English company that developed **Petspeed** is still distributing it throughout the rest of the world (inside a Commodore box, no less!). Gary Huff got his program out of Australia for about $110 U.S. + lots of postage and had no problems with U.S. Customs getting it in. Since Commodore purchased this product, it has disappeared from the U.S. market. The **Petspeed** program itself is dongle-protected, but compiled programs will run and copy without a dongle. Those who have used **Petspeed 64** are divided into two camps: those that think it is great, and those whose compiled programs do not work properly. Gary Huff feels the disadvantages of **Petspeed** are insignificantly minor. For one, dimensioned string variables must be dimensioned with numbers, not letter variables. Occasionally a mathematical argument must be simplified. No machine language subroutines may be used. The 64 version can't compile a program bigger than 80 blocks (a 64 can hold about 150 blocks), or handle programs with more than 288 simple variables. The program also fails to check for errors; it just continues, then gives you a rotten compilation. **Petspeed** works well if you avoid re-using a string of blanks. When done, its programs runs well or better than those done in **Blitz.** For many, it is still the favorite Commodore compiler.

PILOT
Authoring language for the **64**, by Larry Kheriaty and George Gerhold. $60 diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380.
Requires 1541 disk drive. $5 media replacement fee. Machine-language. DOS protected.
Reviewer: Jim Strasma

PILOT (Programmed Instruction: Learning Or Teaching) is a very simple language designed for use by teachers and students. It is an excellent first computer language to learn, because most of its comands require only a single character -- learning often takes only a couple of hours. Yet within its intended use, creating (authoring) lessons and quizzes, PILOT is quite adequate. The Commodore version of PILOT is more powerful than most. To add interest to teaching programs, its commands include several new words that control sound and graphics, including sprites. Its math abilities have also been expanded somewhat, as have its disk-handling commands. There are also some new features that aid proper programming, such as not needing line numbers, and allowing lines to be indented as much as desired. The user is also able to divide the screen, to show both the program text and the graphics created by that program at once. To show its power, and give the novice practical programs to study, Commodore **PILOT** comes with 5 demo programs that show good uses of color, graphics, sprites and sound. The manual is quite good, but too complicated for the sheer novice. The main PILOT program is a bit too easy to get out of, but it also

comes with a separate "kid-proof" version that is "kid-proof." Tamarack's **Vanilla Pilot** may be a better package for the true beginner, because of its simpler set of commands, more readable manual, and copyable diskette. But Commodore's **PILOT** is more comprehensive for experienced users, and better protected against student abuse. If you need PILOT at all, you will eventually want this version.

THE WATERLOO MICRO LANGUAGES

APL,Waterloo BASIC,COBOL,FORTRAN,Pascal,6809 Assembler
Included with the **Superpet** or as a CBM8032 add-on.
64 version of BASIC and Pascal also available.
Commodore, 1200 Wilson Dr. West Chester 19380.
Copyable to any CBM drive.
Printer and host mainframe optional.
Unprotected. No warranty.
Reviewer: Jim Strasma

Several years after their release on the SuperPET, the Waterloo micro languages are still the best available educational versions of the major computer languages, making the SuperPET a real bargain for school use if you can find one. If not, they are also available for IBM PC-compatibles, at a higher price. Both versions are very similar. Currently-available languages are COBOL, FORTRAN, Pascal, APL, BASIC, and 6809 Assembly language. All are interpreted rather than compiled--the key to both their value to schools and lack thereof for business use. All work with an included editor, which is different from Commodore's BASIC editor, and not entirely an improvement. Unlike all other editors I've used, the Waterloo Micro Editor only allows you to copy or move a line or range by saving it to disk and reloading. On a PC with a hard disk, this is a minor inconvenience, but in a networked classroom of 16 SuperPETs sharing one 8050, it's a disaster. On the other hand, debugging a finished program is pure delight compared to such formerly popular competitors as UCSD Pascal, which effectively requires one disk unit per student, a lengthy recompilation after each error, and comes with an incredibly imposing manual. As for documentation, the Waterloo manuals, are too sparse: though quite serviceable as reference guides, they make horrible textbooks for beginning students. Fortunately, the Waterloo languages are largely compatible with hundreds of readily available textbooks. If you <u>really</u> want to get into your SuperPET, there is also a SuperPET user group, with a monthly newsletter of arcane insights into the otherwise undocumented heart of the SuperPET. If you can still find it, the SuperPET's Waterloo languages are a real bargain for student use. The IBM equivalent versions of the programs alone cost more than a complete SuperPET system, but both versions are recommended.

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SYNOPSIS

These programs let two computers talk together directly, using telephones, ham radios, or direct cable links. Such programs are called terminal packages.

WHAT TERMINAL PROGRAMS DO

A terminal program allows your home computer to pass messages back and forth to another computer. It works like a telephone switchboard, connecting two distant pieces of equipment anywhere in the world. Once connected to another computer, your computer can do the same things with the remote computer that you could do if you were sitting in front it. You can talk to main-frame computers and run programs too large to fit in a microcomputer. **To do this, your computer uses a telephone interface (MODEM) to plug into a phone line.** Most Commodore MODEMs plug into the user port of the VIC or 64. Most other MODEMs use an RS232 interface to connect to the same port. A terminal program then picks up the information from the port and translates it into a form the computer can understand. With a suitable program, you can also save a copy of what you receive, and turn it into a form you can use after you halt the terminal program. This saves you from taking notes "on-line." You can also send things to the remote system that were prepared in advance ("off-line"). This cuts telephone charges by reducing the time the remote system waits for you.

Whom do you call? Most "information utilities" charge a membership fee, plus a monthly service charge, in addition to your telephone bill. The most popular and affordable one is Compuserve. Since Compuserve features Commodore's own "Information Network," most Commodore owners that use a MODEM regularly may want to join Compuserve and participate in the network. (Membership is free with purchase of a Commodore MODEM, and there is no minimum monthly fee.)

Some people just want to talk to other computer users, and transfer information between brands of computers. One way to do this is with "electronic mail," which sends a computer message to someone in the same computer system or via a letter service. Many computer user groups have set up free electronic "bulletin board systems" (BB's) across the U.S. With a simple terminal program and your MODEM, you can send messages from your computer to the "host" computer that serves as the bulletin board. You can chat with the operator of the system (the SYSOP) or leave a message for others to read. When you check back, you might find a reply. Some bulletin board systems, when paired with a compatible terminal program, can even transfer programs between computers ("uploading" and "downloading").

WHAT TO LOOK FOR (CHARACTERISTICS)

Although there is a well-established electronic standard guiding the way terminals communicate, **many variables** within it can cause problems and must be set by a terminal program. These **include word length, parity, stop bits, duplex, character sets, and control characters.** Within limits, the settings don't matter, as long as both ends of the wire use the same ones. **When transmitting messages, two alphabetic character sets** are commonly used. One is **EBCDIC, used in IBM mainframe computers; the other is ASCII, used by almost everyone else.** Commodore computers use a variation of ASCII, often called PETSCII. All terminal programs convert this into true ASCII when talking to non-Commodore equipment. You will occasionally receive a faulty character. To avoid problems from this, **various protocols (sets of rules) have been developed. One leading protocol written by Steve Punter is used by most PET Bulletin Board Systems in North America and by VIP Terminal.** Another popular protocol is used in Compuserve "Image files." A third almost universal protocol is XMODEM. With it you can exchange programs with almost any microcomputer.

The terminal programs reviewed here allow you to set all the usual RS232 variables, communicate successfully at 300 baud over a VIC-MODEM, send and receive the full ASCII character set, and have some way to send and receive files. Additional features and shortcomings are noted in the reviews.

THE COMMUNICATOR

Terminal program for all 80 column Commodore models. $200 board and diskette.
Amplify, Inc., 2325 Macbride, Iowa City IA 52240
Requires ROM at either socket. Board plugs into the 6502 socket.
Reviewer: Jim Strasma

The Communicator is simply the best terminal emulator available for the CBM 8032! It allows the CBM 8032 or 8096 to reliably emulate any of three popular terminals, at up to 4800 baud. I've seen an 8032 become both a terminal on both another microcomputer and a large minicomputer without visibly slowing either system, and also seen it become a simple 1200 baud modem hookup. It also serves as a transparent intelligent interface to a mainframe computer. It comes with a PL/1 source listing to allow the host computer to service one or more 8032s easily and powerfully. The host can act like disk drive to store and load programs, transfer messages between fellow users of the host program, and give full access to the large computer's resources. Simultaneously, at the CBM end, you can jump between terminal mode and BASIC without losing data from either mode. While in BASIC, you can also alter the terminal mode's translation tables to allow special characters, such as graphics. It also has a 40+ character log-on buffer, which you use to answer questions asked by the host at sign-on, with a single key. As for disadvantages, it has no option to upload or download files, and needs some setup to handle half duplex. Highly recommended.

PET BULLETIN BOARD SYSTEM

PET bulletin board system for the **CBM 8032** or **64**, by Steve Punter. $100 diskette.
Steve Punter, Mississauga ONT Canada (416/624-5431).
Requires dual disk drive, CBM 8010 (CBM only) or Hayes-compatible (64 only) MODEM, and a "black box" to answer the phone (CBM only).
No stated warranty. Unprotected.
Reviewer: Jim Strasma

This is the standard Commodore system for answering the phone and taking messages. Most large bulletin boards running on Commodore systems use it, largely because of the years of work Steve has put into making a good system. As a host system, Punter's package is fairly capable. It takes and replays messages, offers bulletins (articles), and sends and receives programs. It also allows the SYSOP to do other things, including chatting with anyone using the system. However, the overall power isn't as great as that of systems running on three nearby Radio Shacks and IBM's. It is also too hard for casual users to operate, and requires a lot of work by the SYSOP. The best thing about Punter's bulletin board is that it is the standard. If you want to set up a bulletin board on Commodore equipment, it's still your best option.

TELSTAR 64 or STCP (for the CBM/PET)

Terminal program for the **CBM/PET** or **64**, by Carl Moser.
Telstar: $40 cartridge for the **64**.
STCP: $130 board and diskette for the **CBM/PET**.
Eastern House Software, 3239 Linda Dr., Winston-Salem NC 27106.
Full 60 day warranty.
Reviewers: Mark Niggeman, Jim Strasma

STCP version: This hybrid (hardware + software) terminal package is still first rate. It now works at 1200 baud in terminal mode, and although it won't receive a file from my Tandy 100 reliably at that speed, it will send one without difficulty. At 300 baud, the two computers chat like long-lost friend. (Remember to swap wires 2 & 3 in the RS232 cable between the 2 computers, or buy a $30 "null MODEM" to do the same thing.) The unit uses only 0-5 volts as delivered, but provides the negative voltage needed by my RS232 MODEM when you add 2 wires. The stand-up style board fits in the $A000 socket. A lay-down option is also available that includes a socket for another ROM at the same address, keeping for itself only the last few bytes. Since **Micromon** uses those only for the release

date, the two work well together. Overall, this is an excellent package, which I now use daily. It is made all the better by Carl Moser's well-earned reputation for support after the sale. Recommended.

Telstar 64 version: Like **STCP, Telstar 64** is among the most powerful terminal programs available, with the expected options, but easier to learn and use than most. Having it in cartridge form is especially convenient--no diskettes to swap and no worries about DOS protection killing your 1541. Another very good feature is its ability to automatically tokenize a BASIC program as it is received and stored to disk. This allows sharing programs with owners of other brands of computers (including mainframes), and having them run with few if any changes once loaded, so long as the program received uses only standard BASIC. Mark Niggeman has been using it to communicate with a VAX 11/780 Super-Mini computer, and is very satisfied with its performance. Other notable features include a very nice and easy-to-use menu, full info status line, full cursor editing (in line mode), filtering of troublesome characters, an alarm clock, and a brief but effective manual. You can also auto Dial and hang up via a menu selection. Unfortunately like **STCP, Telstar 64** is unable to receive files reliably at 1200 baud. Fortunately, this won't bother those who use Commodore's 1600 and 1650 MODEMs. One bug Mark Niggeman noticed was that time keeping was not accurate during uploading or downloading. One other small complaint is that the CTRL key isn't used as itself--**Telstar** substitutes the LEFT-ARROW key. It also lacks both the Punter and Vidtex download protocols for uploading and downloading files. Even so, it is the only completely cartridge-based terminal Jim Strasma we've tested that is both capable and comfortable to use. It is also a real bargain. If you do a lot of telecommunications with non-PBBS systems, this cartridge is a worthwhile investment. Recommended.

VIDTEX

Terminal versions for **PET/CBM** or **64**, by Duane Harris. $40 diskette .
CompuServe Info. Serv., 5000 Arlington Centre Blvd., Columbus OH 43220 (800/848-8990).
PET version requires IEEE MODEM (Star or 8010) or RS-232 MODEM via user port.
64 version requires VIC MODEM and 1541 disk drive. Unprotected.
Reviewers: Jerry Key, Jeff Lowenthal, Keith Peterson, Howard Schwarzman, Mike Stout, Jim Strasma

For serious users of the CompuServe system, this intelligent terminal package is designed to take full advantage of the proprietary 'B' protocol used by Compuserve. It is NOT a general purpose terminal emulator for use on any and all systems. An easy to make interface cable layout is provided in the PET RS-232 version manual. Being written for use on CompuServe by CompuServe ensures complete compatibility. The 64 version has the same features as the PET version, but also supports color and has a larger 32K buffer for data capture. The main feature of this package on both versions is error free uploading or downloading of programs to or from the disk or buffer, using CompuServe's Filtrn (file transfer) program. You can also send ahead pages for storing different games screens in memory (vs. resending each time) for serious game players. When the buffer is full, the program sends a Control S to the host while saving to disk, so you don't miss anything. When you display the buffer, the text scrolls by almost too quickly to read, but output can be paused. It has excellent screen handling, user defined function keys, and automatic cursor positioning by the host system, and virtually any printer is supported. A help screen and function menu is always available. The documentation is adequate, except for sections on creating an auto log on, and explaining edited and unedited saves to disk. It combines very advanced standard features like RAM capture and printer dump. The downloading feature saved Mike Stout 20 minutes one night. However, non-programmer Howard Schwarzman spent almost a week trying to understand this program, and found it "downright antagonistic. The documentation seems to start in the middle, the auto dial wouldn't dial, the terminal wouldn't term and the functions wouldn't funct." He returned the CompuServe Vidtex Terminal Software package to CompuServe, who really are good folks, try hard to please, and do provide a great service. **Vidtex** is the only program tested that can

actually auto-dial and auto-log onto real systems without any key pressing by you beyond running the program--an amazing oversight in its competitors. You don't need the program diskette in the drive after startup, saving loading time and disk swaps. We would have liked to load the program from diskette and immediately see a menu of options, as when you sign on to Compuserve itself. New users may become frustrated long before finding out how to display its two help screens. You'll really notice the lack of an 80 column option, but word wrap keeps things fairly readable, and being able to display downloaded color graphics (unique among terminal programs) partly makes up for it. Easy to use and excellent with CompuServe and BB's, though Jeff Lowenthal uses Punter's program for downloading on Commodore boards. If you spend any time on Compuserve, this is the terminal program for you. Highly recommended.

VIP TERMINAL

Icon-driven terminal program for the **64**, by Dan Nelson and Brian Lundgren.
Softlaw, 9072 Lyndale Ave. So., Minneapolis MN 55420
Reviewer: Jim Strasma

Imagine Commodore's **Magic Desk** program on-line. Softlaw has made a valiant attempt to ease the hassles of using a full-featured terminal program. In addition to a high resolution desk image at the start of the program, **VIP Terminal** makes full use of icons (pictures) and joystick selection of options (next best thing to a game). Then, when you really want to use the program, it has several dozen help screens to explain most things. Unlike **Magic Desk, VIP Terminal** has almost no limits to its power. It is the only program tested that can serve as a host computer itself, answering the phone when you're not around, taking and giving messages, and even sending and receiving programs. It also stores all the usual MODEM parameters separately for each of the 16 numbers in its phone directory. Unfortunately, its sign-on routine only stores one prompt and one response, not enough to sign on to any network. Another aspect that could be improved is the instructions for off-line message preparation. Each of 20 function keys holds 127 characters. A few owners may use a gimmick that tone dials for you through the TV speaker and your phone handset, but **VIP Terminal**'s chime on the quarter hour, and beep at the right margin features are more useful. If you're looking for a very powerful terminal program that's still easy to use, consider **VIP Terminal** first. Recommended.

COMPANY UPDATE: Version 7/1 works with the HES 2 and Mitey Mo modems. We have provided a CBM ASCII/straight ASCII conversion in the file management menu. This optional conversion allows all CBM ASCII files to be automatically changed to ASCII files when uploaded, and all ASCII files to be converted to CBM ASCII when saved. THis should be a great help to those who use the 64 at home, but use another type of computer at work or at school. A new utility has been added to the disk as well. This is a primitive terminal program for transferring files using the increasingly popular Xmodem protocol. This will be helpful to those who wish to use the Xmodem option offered by CompuServe, and by several BBS's. This utility is explained in the Utilities help file on the disk.-Thomas R. Nelson, Marketing Director, Softlaw Corp.

SYNOPSIS

Most of these programs don't have to be in memory for another program to run. Disk and cassette utility programs simplify disk handling chores, such as copying programs for archival backups, doing disk diagnosis and maintenance, speeding up program load times, and creating disk catalogs.

WHAT DISK/CASSETTE AIDS DO

Disk and cassette aids ease your work in handling programs and files on peripherals. They are **also known as utilities,** meaning useful programs. These aids come in several varieties, **including copying programs, disk monitors, speed-up programs, and checking your disk drive for hardware malfunctions.** Which ones you need depends on your skill level. At first, you will only need an "archival backup" program--one that copies the original program in case of damage. And should a dread day come in which a program or diskette becomes unusable, disk utilities will help make repairs.

If you have a cassette only, one of the first utilities **you may want** is **a high-speed cassette routine.** These are fairly simple to use and save most of the time normally spent waiting for programs and data to load.

Other helpful disk housekeeping tasks are: sorting the directory alphabetically, merging and separating files, moving load addresses of programs easily, and most importantly, recovering accidentally lost or damaged files and programs.

WHAT TO LOOK FOR (CHARACTERISTICS)

As reflected in the reviews below, several user groups offer disk and cassette aids as good as or better than some commercial program utilities. Do check with your local user group before buying utilities.

Good utilities are not protected against copying. This is as it should be. Once you have them, you'll use them constantly. And the last thing you want to have happen is for a utility to suddenly decide somebody's tampering with it and self-destruct while you're using it to repair another program you're trying to recover.

The ancient Greek playwrights wrote of "hammartia", the fatal flaw in otherwise good people. Most diskette copying programs also bear a fatal flaw--they copy the works of others, but not themselves. Some utilities allow a limited number of copies of itself to be made with a special technique. The flaw is that other software companies have already studied the escape hatch these programs use to protect themselves, and now use similar methods in their own protection. This makes the copy programs less useful than expected, and has inspired new programs from other sources to copy both the copiers and the difficult programs. Since all these uncopyable programs have been copied, what was really gained by making the copy programs less powerful than they could have been? In disk copying programs, we'd love to see just one that allows itself to be copied--or at least let you make a couple of copyable run-time versions. Speed is also important, as well as being able to copy between different disk drive units (not only drive Ø & 1 of a dual disk drive unit, but also units 8 & 9).

In cassette and disk speed-up programs, compatibility with all programs, including the ham-strung protected ones, is the essential feature. And let's not forget MSD owners.

Alignment programs need to be simple enough for a beginner to understand, but have enough detail for the hardware hacker to make his own adjustments (knowing this voids the warranty of course).

COPYALL
Disk copier for **all Commodore disk drives.**, by Jim Butterfield. Free diskette.
Available from user groups.
Requires two CBM disk drives. BASIC plus machine language. Unprotected. No warranty.
Reviewer: Jim Strasma

Copyall is a disk file copy utility, intended to move some or all of the files on a diskette to another disk drive or unit. To use it, you specify the from and to disk drives and units, a directory pattern to match, if any, and then accept or reject each matching file on the source diskette. You'll have a chance to format the destination diskette if need be, and then the chosen files will be copied to it. One little-known trick is that if you press RETURN after accepting or rejecting one file, all further files are treated the same way, without further questions. A non-working version of **Copyall** is on the old 1541 test/demo diskette. Current versions have a dash between copy and all, ie. "copy-all64". Recommended.

DISK PATCH 64
Diskette monitor for the **64**, by Steve Hanlan. Free diskette.
Available from user groups.
Requires CBM DOS 2.1-compatible disk.
Written in machine language. Unprotected. No warranty.
Reviewer: Jim Strasma

Once upon a time Commodore developed a wonderful program called **Diskmon** that nobody could get. It would allow you to edit a diskette surface as easily as **Micromon** allows you to edit the contents of your computer's main memory. Well, **Diskmon** never did circulate, but **Disk Patch 64** does everything we could have hoped for from Diskmon, and seems to be in the public domain. To alter a diskette, simply press the needed key one or more times, as shown on the menu/help screen that greets you when starting Disk Patch. You will then see a directory, or the BAM, or a selected sector. From there, you may alter data, or chain through a file, as desired. When you alter data, the display is just like in Micromon's "m" command, complete with scrolling, making **Disk Patch** an easy program to learn. If you know what you're doing, **Disk Patch** is able to do the same chores as a dozen other utilities together, such as changing load addresses, locking files, hiding messages on the disk, altering the diskette name, and so on. It is also seems to be entirely reliable. If you crash a file with it, it will be your own doing, and not the fault of **Disk Patch 64.** **Disk Patch 64** is the best program on Jim Strasma's revised Test/Demo Diskette for the 64, and also works well on MSD drives. Highly recommended.

DOS 5.1 (WEDGE)
DOS language aid for **all Commodore computers**, by Bob Fairbairn. Free diskette.
Commodore, 1200 Wilson Dr., West Chester PA 19380.
Unprotected. No warranty.
Reviewer: Jim Strasma

Though included with the 1541 disk drive, **DOS 5.1** is worthy of separate mention. RUN magazine has called it the single best Commodore program, and I heartily agree. Without it, many 64, VIC, and PET owners would be totally unable to use their disk drives. In fact, if Commodore were to include it in their kernal ROMs on some future machine, I predict it would quickly replace the current BASIC 4.0 disk commands in popular use. Now that you can buy inexpensive replacement Kernal ROMs for the 64 that include it, I wouldn't be surprised to see it become as popular as lower-case adapters were for early Apples and TRS-80's. It would certainly do most of us more good than a cassette port. One surprising thing about it, though, is that no one has yet described all its commands. Since the source code is readily available and lists them all, this is surprising. If I were limited to a single utility program for my 64, this would be the one. Highly recommended.

FAST LOAD

Disk and machine-language aid for the **64**. $40 cartridge.
Epyx, 1043 Kiel Ct., Sunnyvale CA 94089.
Requires 1541 disk drive. 90 day free replacement warranty.
Reviewer: Jim Oldfield, Jim Strasma

One of the most-wanted accessories for the 1541 disk drive is anything that speeds up program loads. Although such products are common now, **Fast Load** is among the most popular, largely because it simply plugs into the 64. This makes it incompatible with more programs than such competitors as Skyles' **1541 Flash** with its optional extra cables and switches, but it also costs far less, especially when you figure in a typical $30 dealer installation. Though it's inconvenient to have your cartridge slot filled, surprisingly few programs are sold only on cartridge. Disk users won't miss the slot often. On the other hand, the programs incompatible with **Fast Load** include some of the very best, such as Broderbund's **Print Shop.** That means you will be plugging **Fast Load** in and out. **Fast Load**'s speed approximates Epyx's claim of 3-5 times faster. Current versions only have trouble with relative data files; therefore, don't use it with database or some spreadsheet programs. Surprisingly, almost nothing has been said elsewhere about **Fast Load**'s other skills. **Fast Load** includes a disk monitor able to edit any sector on a 1541 diskette, an easy way to lock and unlock files, simple disk commands, and a useful (though unusual) extended machine language monitor. The **Fast Load** monitor does some useful things **Micromon** can't, such as disassembling only instructions of a particular type. These features will be of more help to program thieves than to authors, but I'm surprised they've not been noted before. Anyone needing more speed from a 64 and 1541 at reasonable cost for loading large BASIC programs or game diskettes should look carefully at **Fast Load.** Jim Oldfield's comment is typical of happy users, "I don't leave home without it."

1541 PHYSICAL EXAM

Drive alignment tester for the **64**, by Buck Buchanon and Stu Mitchell. $40 diskette.
Cardinal Software, 13646 Jefferson Davis Hwy, Woodbridge VA 22191 (703/491-6502).
Requires 1541 disk drive, printer optional. Unprotected. Disclaimer of warranty.
Reviewers: John Hulsberg, Jim Strasma

Physical Exam is a dynamic test of the following disk drive parameters: Head alignment, Read/write accuracy, Record/playback electronics efficiency, Track One stop placement, and Rotational drive speed using a tachometer program. The neatest thing about this program is what it does--tell you, in just a minute or so, whether or not your 1541 drive is properly aligned. The second neatest thing is that it has the first perfect copy protection scheme we've seen. Only the specially made original diskette is physically able to give meaningful results. Eat your heart out, pirates! There are two tests in this package. One measures motor speed in RPM, showing variability as well (if the speed fluctuates much, your drive belt is bad). Unique to the **Exam** is the other test, the dynamic head alignment check, makes the 1541 attempt to read sectors that are progressively more off-track, until finally it fails. Then it does the same check going off track the opposite direction. This is repeated on 3 important tracks (1, 16, and 35), giving a very clear indication of both the latitude of error acceptable to your drive, and the accuracy of its centering on track. After this, the track 1 stop is checked, to be sure it is properly set (some aren't). This method has long been used to check head alignment on business minicomputers (e.g., Xerox and DEC), but this may be a first for the 64. Many things that can go wrong with a 1541 are instantly identified by this simple test, and a skilled user can align an inaccurate drive with the help of this program, as Jim Strasma recently did to a new SX-64 (what a job!). Without a doubt, **1541 Physical Exam** should be in every user group library, and in any home or office where a 1541 is used for serious business purposes. If you can load and run a game, you can use **1541 Physical Exam** properly. Repair techs can use **Exam's** printed results as service and diagnostic tools. It was a great hit at the 1984 LC^4 camp, where it was completed, and at the 1984 MARCA fair; it deserves every bit of its success. Highly recommended.

FILEMASTER,
Disk file maintenance program for the **8032,** by Len Sasso. Diskette.
Len Sasso, Box 969, Laguna Beach CA 92652.
Requires 8050 disk drive. Unprotected. No warranty.
Reviewer: Ellen and Jim Strasma

Filemaster is a surprisingly useful program. It easily handles many normal disk maintenance chores elegantly, especially the tough job of selectively copying or scratching some of the programs on a diskette. It also displays a three column complete directory, including deleted files, which may be printed. But one of its best skills is in recovering scratched files. All it needs to know is the file type of the file to be recovered. Its directory display and copying operations can take place on the directory as read, or in sorted order. In summary, this is one of only a very few programs Ellen Strasma is willing to run, and Jim Strasma uses it almost daily. However, request the older uncompiled version, as one simple change is needed to make it work with the 4040 and 8250. Highly recommended.

FOUR MINUTE COPY
Fast single drive backup for the **64,** by Thomas Tempelmann. $5 freeware.
From user groups--send $5 donation to the Toronto PET Users Group, payable to:
TPUG, 1912A Avenue Rd., Ste. 1, Toronto ONT Canada M5M 4A1.
(TPUG will purchase German marks and forward the money to the author.)
Requires 1541 disk drive. Printer must be disconnected. Unprotected. No warranty.
Reviewer: Jim Strasma

Four Minute Copy (also known by a dozen other names, and ripped off by numerous commercial products) is among the best programs available for the 64, because it goes such a long way toward solving two horrible problems of that system as usually used. First, it turns a half hour ordeal with **1541 Backup** into a 3-4 minute ordeal with **4 Minute Copy,** when you duplicate a diskette. Second, it automatically recreates the DOS errors many companies still use to keep people from copying their products, thereby allowing users to make a spare copy of many important diskettes. Unfortunately, the author of this fine program has received far too little for his efforts. Even a media blitz in every user group newsletter in North America seeking donations from those using it has thus far brought in only a few hundred dollars, and the program has yet to be mentioned in any of the commercial or magazine programs using its methods. Highly recommended, but only if you promise to thank the author properly.

MR. NIBBLE
Disk duplicator for the **64.** $50 ppd. diskette.
Full Circle Software, Box 1373, Dayton OH 45401 (513/223-2102).
Requires one 1541 disk drive. 120 day free replacement warranty.
DOS protected; 1 spare available for $10 extra.
Reviewer: Jim Strasma

Well, this is it--state of the art disk copying in 1985. Unlike other copiers we've tested, **Mr. Nibble** isn't bothered by even the latest DOS protection tricks, including added tracks, half tracks, and errors on top of errors. It copied nearly every previously uncopyable diskette we tried. Besides that, it is easier to use than most competing poducts. Just press a key or two, swap the diskettes when asked (it takes about 5 two-way diskette swaps), and wait several minutes. The diskette also includes a quick format routine, but takes long enough to load that this would only help if you're doing more than one. The only negative about the package is that it can't copy itself. As noted before, this seems morally inconsistent and ultimately futile, but not an immediate concern to buyers since a spare copy is available at a reduced pice, and the diskette is guaranteed. If you need a way to make a legitimate archival copy of a pogram that is not intended to be copyable, **Mr. Nibble** is the best way yet to do it. Highly recommended.

RABBIT
High speed cassette driver for the **all Commodore computers.** $40 cartridge or ROM.
Eastern House Software, 3239 Linda Dr., Winston-Salem NC 27106
60 day Warranty. Written in machine language.
Reviewers: Steve Garmon, Warren Gordon, Mark Niggeman, Paul Scheuer, Jim Strasma

ROM Rabbit allows you to automatically and accurately load, save or verify an 8K program in about 30 seconds, instead of 3 minutes. Not only does it work smoothly and efficiently and highly reliably, but it saves time, gives easier storage on cassette and is nearly as fast as the 1541 disk drive. In addition, **Rabbit** has simple commands to convert hex numbers to decimal and back, test memory for failing parts, and other programmer's aid commands. When using this cassette supercharger, you no longer have to press the Commodore key on the 64 or VIC to load programs. Also, any area of memory can be saved by specifying start and end addresses, and the program length plus its start and end addresses are displayed during a load. But most important is the ability to easily load or save data files 2+ times faster than the normal Commodore cassette speed. Programs can be loaded and appended to the program currently in memory, and all normal commands work with the **Rabbit.** **Rabbit** commands can even be incorporated into your programs if desired. On the 64, you may have to hook a wire from the cartridge--housed in plastic, unlike the VIC version--to the cassette port. The 64 cartridge can hold any other cartridge, and most cassette-based programs will work with it. Even the manual is excellent. Highly recommended.

SCOPY 5.0
for the **CBM, PET** or **64,** by Keith Peterson. Free public domain diskette.
Available from user groups.
Requires two CBM disk drives. Compiled BASIC. Unprotected. No warranty.
Reviewer: Jim Strasma

Scopy is a disk file copier, along the lines of Butterfield's **Copyall** series, but with some unique features. It allows you to display a full or partial directory of the source diskette, and then scroll up and down through that list, however long it is, choosing program, sequential, or relative files to copy. This allows you to copy them in a new order, which can be very useful. You may even give files a new name on the destination diskette. This is one of those utilities you don't think much about, but use constantly. Recommended.

ZAPET
Diskette monitor for the **CBM/PET,** by Disk Immers. $35 diskette.
Dick Immers, 1502 Brookfield Ct., Adrian MI 49052
Requires CBM DOS 2.1-compatible disk.
Written in BASIC. Unprotected. No warranty.
Reviewer: Jim Strasma

There's no need for PET owners to feel left out when you read about the wonders of **Disk Patch 64.** Dick Immers offers a very similar program for the PET/CBM, as part of his **Disk Utility Pack.** Frankly, it's the only part of the pack we really use, but we use it enough to be worth the $35 all by itself. It allows you to do the same useful chores as **Disk Patch 64,** hampered in only two repairable ways. First, it constantly asks "Are you sure?" before doing anything. I disabled this for all who answer the first question with an "x" for expert. Second, the BASIC-only version is quite slow, but can easily be compiled, and is then quite peppy. Recommended.

SYNOPSIS

Graphics programs design one or more of the three kinds of Commodore pictures (Commodore character on all models, high-resolution graphics on the VIC and 64 machines, plus sprites on the 64). They include business and artistic applications, animation programs, etc. Music programs compose music using the VIC chip, the SID chip on the 64, and CB-2 sound on the CBM/PET. The 64, in particular, creates sound worthy of an organ.

WHAT GRAPHICS, MUSIC AND SOUND PROGRAMS DO

Because the sound and graphic abilities of the VIC and 64 are so sophisticated, they are very hard for newcomers to use well, but with a graphics program, even the newest computer user can draw colorful bar graphs for business, kids can turn the computer screen into a fancy "etch-a-sketch" machine, and programmers can create and animate extremely detailed cartoon characters for arcade-type games. Some sound aids turn the computer keyboard into a piano keyboard on which to "play" favorite tunes or create original music, while other music aids allow the experienced programmer to create any kind of sound from machine-gun bursts to complete four-part orchestral harmony.

In the graphics category, the VIC (Video-Interface Chip) chip on the VIC provides two different kinds of graphics characters. The most obvious are Commodore's character graphics. Just hold down the SHIFT key on the keyboard and press a key that has the appropriate "picture" on its front. To use other characters, some drawing programs help you define your own characters. Better yet are high resolution pictures provided by nearly all drawing programs, with varying degrees of ease. The 64 has a third type of graphics character, called "sprites." Up to eight highly detailed graphics characters can independently move over, under and around other characters on the screen, making a highly realistic animated picture.

In the sound and music category, the CBM and PET computers can produce the simple CB-2 sound, the VIC's VIC chip can produce three different kinds of sophisticated sounds, while the 64's extra SID chip adds the power of a full electronic music synthesizer to your computer.

WHAT TO LOOK FOR (CHARACTERISTICS)

The best graphics and sound programs **include enough instructions,** and are easy enough to use, that any user can cope. They **also have enough power to push the VIC or 64 to its limits.** Better ones **also come with demonstrations** for you to first enjoy and later study. **Some programs cover only one kind of graphics or sound; better ones cover several types. Some aids work by themselves,** drawing pretty pictures or whatever. **Other aids design pictures and sounds that can be added to other programs that you write;** however, the creating program may have to be loaded into your computer at the same time as the second program that is to use the pictures and sounds. The **best aids generate something that can be easily added to other programs.** With one of these, you can give someone else a song to play in an educational game, for instance, without having to loan out the aid that created it.

Some aids are controlled by typed commands, others by joysticks, and a few by light pens and graphics tablets. **Be sure the method makes sense to you.** For instance, a music program that works by playing the keyboard like a piano, with the resulting music displayed on the screen like a written staff of music is great for musicians, especially if they can edit out wrong notes later. But even the tone deaf can make great music with a program that easily allows them to copy songs out of ordinary songbooks in a way that makes sense to non-musicians.

Because light pens and graphics tablets are hardware, the programs that make them useful will be reviewed in our Hardware issue in the fall of 1985.

GRAPHIC AIDS

CHARTPAK 64

Bar graphs for the **64**. $43 diskette.
Abacus Software, Box 7211, Grand Rapids MI 49510 (616/241-5510).
Reviewer: Elizabeth Kaspar

Chartpak 64 makes the most sophisticated bar graphs of any Commodore program so far. Each bar can be segmented, and for emphasis, each segment striped in different directions or dotted. Other programs such as **Graphics Assistant**, offer only solid black bars. It, too, has a selection of pie and line graphs, as well as vertical or horizontal bars, and the shape of charts can be varied. It can also incorporate **Busicalc** files. Though the program is excellent, the manual is not; it consists of flimsy cardboard and the instructions, in tiny print, are most difficult to follow. I spent a half hour trying to call up some of the demo charts. I recommend it, however, for those who have the time to fathom the instructions.

DOODLE

Drawing/painting aid for the **64**, by Mark R. Rubin. $30 diskette or cassette.
City Software, 735 W. Wisconsin Av., Milwaukee WI 53233 (414/291-5125)
Requires 1541 disk drive or datasette, and joystick or trackball.
CBM or ASCII Printer optional. Full warranty. Machine-language. Unprotected.
Reviewers: Mike Stout, Jim Strasma

Doodle is an incredible sketching program, with more features than the fanciest camera. You have differing sizes of sketching and erasing pencils. You can also zoom in on a portion of a picture, and alter things pixel by pixel. There is even a text mode, in which you can type in words in upper or lower-case, and then do anything to them that you could to any other part of a picture. Naturally, it will draw and erase lines. It can also draw boxes, memorize their contents, copy them elsewhere, expand them up to 16 times, invert them, turn them 90 degrees, reverse figure and background, and erase everything but outlines. You can then save the whole screen to computer or disk memory, and reload it later. For a visible record, the entire picture can be printed directly on graphics printers. To improve your accuracy, you can superimpose a grid on the screen as you draw, and then remove it. You'll be especially impressed when you learn to use the extensive color capabilities. All it lacks are ways to program sprites and sounds. The saved files can be loaded back in the computer to use in other programs, but the brief manual doesn't say how. Apart from that, the manual covers everything well, and there are screen menus for each option. Recommended.

INPUT EDITOR

Forms input editor for the **CBM/PET** or **64**, by Paul Higgenbottom. Free diskette.
Available from user groups. Unprotected. No warranty.
Reviewer: Jim Strasma

Some years ago, Commodore UK proposed some excellent standards for form data entry programs to follow. To make it easier to obey them, Paul Higgenbottom wrote and donated to the public domain a machine language forms editor to do all the hard parts. It is similar to the **Procep** editor from Commodore France that eventually grew into **Master** (previously reviewed in Midnite), but having the source code available has made Higgenbottom's input editor more valuable in the long run. It has now been converted to the 64, and is part of our new church package, as well as a program I recently wrote for Dad Spencer's PET. (A non-public domain enhanced version of it is also the best part of Commodore's **Easy Mail** package.) If you are developing programs that input data from a form, you should be using it. Highly recommended.

MOVIE MAKER
Cartoon designer for the **64**, by Interactive Picture Systems. $50 diskette.
Reston Computer Group, 11480 Sunset Hills Rd., Reston VA 22090
1541 disk drive and joystick required. DOS-protected (thumps repeatedly). No warranty.
Reviewer: Jim Strasma

Movie Maker is a most unusual program, a serious aid to animation. With it you can design and perform your own cartoons, complete with multi-voice music, up to 6 characters, each assuming up to 16 positions as it pursues a separate sequence of movements at varying speeds, through up to 300 frames, with detailed backgrounds, and up to 5 colors. Surprisingly, this is not done with sprites, so your characters aren't limited in size. Since this is a very complex process, it shouldn't surprise you that it takes some time to develop anything worth viewing, but the results may well be worth it for serious artists or those storyboarding real movies. And if you want to include your results in your own programs, you can either order a professional version at added cost, or simply load your shapes and backgrounds into the appropriate memory locations as needed. To show what is possible, **Movie Maker** includes quite an impressive demonstration. There is also a series of things for you to try yourself, using some very lifelike predrawn characters. (The running dog sequences were as impressive as the galloping horse demo Apple used to sell the Apple III a few years back.) Although not nearly as easy to use as Mindscape's **Mr. Pixel's Cartoon Kit, Movie Maker** gives the patient joystick artist almost unlimited freedom of expression. With tools like this available, expect to see home computer graphics that rival TV cartoons in complexity. More importantly, graphic artists can use **Movie Maker** to develop images of light and sound more lifelike than anything now available. Recommended for serious artists.

THE PRINT SHOP
Commercial art program for the **64**. $50 diskette.
Broderbund, 17 Paul Dr., San Rafael CA 94903-2101.
Requires 1541 disk drive and one of 9 ASCII printers or Commodore's 801.
DOS-protected (no thump). 2 year free replacement warranty.
Reviewer: Jim Strasma

By general agreement, **The Print Shop** was the only new Commodore program to achieve star status in the second half of 1984. I am amazed at how many club newsletters use it, and you will recognize its work on the cover of this issue. Despite its relatively high price, **The Print Shop** was a "must buy" this Christmas, almost as hard to find as Cabbage Patch kids. Briefly, Print Shop is a commercial artist, one that offers you customized greeting cards, letterheads, signs and banners of excellent quality via any of the popular dot matrix printers (except the 1526). Further, it is so easy to use that I have yet to need the lengthy manual, though it contains many useful hints and creative ideas. It is difficult to overestimate the value of such a program--having a single letterhead designed commercially costs $50 here. At the same time, your dealer's margin is excellent, so you have a right to expect good support. The only limitation I have found in the program is the triteness of some of the 60 graphic designs included with the package. Fortunately, they can be customized or replaced easily by the user, and another disk of 120 more graphics has recently become available (untested). **The Print Shop** is one of those rare programs that is very useful and truly shows off the 64 to full advantage. It is one program every 64 owner with a printer will want. Highly recommended.

SPRITEMASTER 64
Sprite aid for the **64**. $40 diskette.
Access Software, 925 E. 900 South, Salt Lake City UT 84105 (801/532-1134)
Requires 1541 disk drive. Machine language. Unprotected.
Reviewer: Jim Strasma

In **Spritemaster 64**, we have a program that lets you design animated "sprite"

characters, either one at a time or in groups of three. The program includes sample sprites, as a guide, and allows you to set all parameters of a group of sprites with single keystrokes. It shows 3 at a time, and allows you to move them around with cursor controls. There is also an animation mode to test moves. Sprites may be saved and loaded for use in other programs via a two-line program. The manual is fairly complete, with full instructions on use and technical details on sprite-building. When Commodore provides such powerful raw materials as sprites for graphics on the 64, it's nice to find a good tool like **Spritemaster 64** to help us use them.

SUPER EXPANDER

Sound and graphics aid for the **unexpanded VIC.** $60 cartridge with 3K RAM.
Commodore, 1200 Wilson Dr., West Chester PA 19380 (800/662-2444)
No warranty.
Reviewers: Jim DeMian, Jim Strasma

If you want an easier way to program graphics and sounds on your VIC and are limited by the VIC's memory, **Super Expander** is a good program to buy. Besides added 3K or memory, we have here a little handy-dandy plastic box that's chock full of missing BASIC commands. Non-programmers will find little use for it, but even children who are learning to program will enjoy it greatly. As a memory card, the Super Expander raises the total RAM memory of the VIC to match the 8K capacity at of the first Commodore PET computers. When in place, it also re-arranges the VIC's memory map to approximate that of the PET, making it easier to convert PET programs to the VIC. As a language card, the Super Expander adds 17 English-type commands to BASIC. Most are assigned to the function keys and do exactly what they say they do: select a Graphic level, choose a Color, Draw a line, set a Point, draw a Circle, or Paint an enclosed area. Key can change a function key to any desired string of up to 128 characters, Char puts text on a graphics screen, and Sound fully controls up to four tones and their volume. Another group of commands looks at various settings, including the graphic mode in use, color in a register, color at a spot on the screen, sound in a register, and the positions of game paddles, joystick and light pen. The only problem with **Super Expander** is that since it costs as much as the VIC itself, few VIC owners have it, and few commercial programs use it. Moreover, because it rearranges memory, many commercial programs will not work while it is connected. It's going to take some time to learn all the commands, and programs you write for it cannot run without the Super Expander cartridge in place. Those unable to program in BASIC will prefer simpler programs that sketch with the joystick. Skilled programmers may prefer to use PEEKs and POKEs, to make their programs more universally acceptable. Even so, **Superexpander** is an excellent product for VIC owners wanting graphics and sound capabilities.

ULTRA-BASIC 64

Graphic and sound aid for the **64,** by Roy Wainwright.
$40 cassette or $43 diskette.
Abacus Software, Box 7211, Grand Rapids MI 49510 (616/241-5510)
Requires Datasette or 1541 disk drive. CBM or Epson printer optional
90 day media warranty. Written in machine-language. Unprotected.
Reviewers: Jim Strasma

Programmers that want their graphics and sound aids in one unified package should take a look at **Ultra-BASIC 64.** Abacus software has put **Screen Graphics 64** together with **Synthy 64,** and added some more general purpose BASIC commands to form **Ultra-BASIC 64.** The graphics portion, **Screen Graphics 64,** works like its VIC version (**GraphVICs**), with a few welcome additions. It lets you draw fancy graphics with only a few lines of BASIC-line commands, such as DRAW, CIRCLE, BLOCK and FILL. These English words are much easier to undstand than the cryptic letters of the VIC version. With high resolution (319 dots by 199 dots) and sixteen colors, you can create single and multi-color sprites, as demonstrated by the very impressive demo program. It also includes a helpful tutorial

program, and works reasonably fast. The sound portion, **Synthy 64**, is surprisingly simple, yet very complete, easy and fun to use. Although it only uses one time signature (4/4 time) and lacks measures for composing music, it uses a tempo command, ties notes together for different note values, and can repeat stanzas. You can print to the screen, input information, and design custom instruments. Its most exciting feature is a way to play three different voices with a simple keystroke for each voice. You can even view all music registers as music is being played. You can set waveforms (but only the high pulse for the variable pulse waveform), and set AD/SR. It even has features that are not mentioned in its otherwise very fine users manual, such as ring modulators and resonance registers. If you like using commands to form graphics and sound, **Ultra-BASIC 64** should be a permanent part of your library.

MUSIC AND SOUND AIDS

MASTER COMPOSER

Music aid for the **64**. $35 diskette.
Access Software, 925 E. 900 S., Salt Lake City UT 84105.
Requires 1541 disk. CBM printer optional.
DOS-protected, one spare available for $7.50. 90 day limited warranty.
Reviewer: Jim Strasma

The demo for **Master Composer** is quite impressive, as is the graphic display of each note in all 3 voices as they play. Even more impressive is the ability to load each song separately, without **Master Composer**, and play it in the background (via IRQ) while you continue with another program, or even write a new program. The demo songs include everything from Donna Sommers to Beethoven, all well done, and another diskette of hits is available for $10 extra. For those interested in writing their own songs, virtually everything the SID chip can do is covered by the many options in **Master Composer**, all controlled about as easily as such a complex device can be. There are, for example, help screens, as well as an audition mode to sample current changes, and a screen dump that copies your work to a 1525 or 1526 printer. Up to 127 measures can be entered, using widely varying note values and time signatures. More than one finished song can be in memory at once, and a simple BASIC program can call each in turn as needed in a long piece. Personally, I'll miss the transposition ability of **Music Construction Set**, though not its painful choice of colors, and 2 voice limitation. **Master Composer** is an excellent program that deserves wide use. Recommended.

MUSIC CONSTRUCTION SET

Music aid for the **64**, by Will Harvey. $40 diskette.
Electronic Arts, 2755 Campus Dr., San Mateo CA 94403.
Joystick optional. 90 day media warranty.
Reviewers: Randy Chase, Jim Strasma

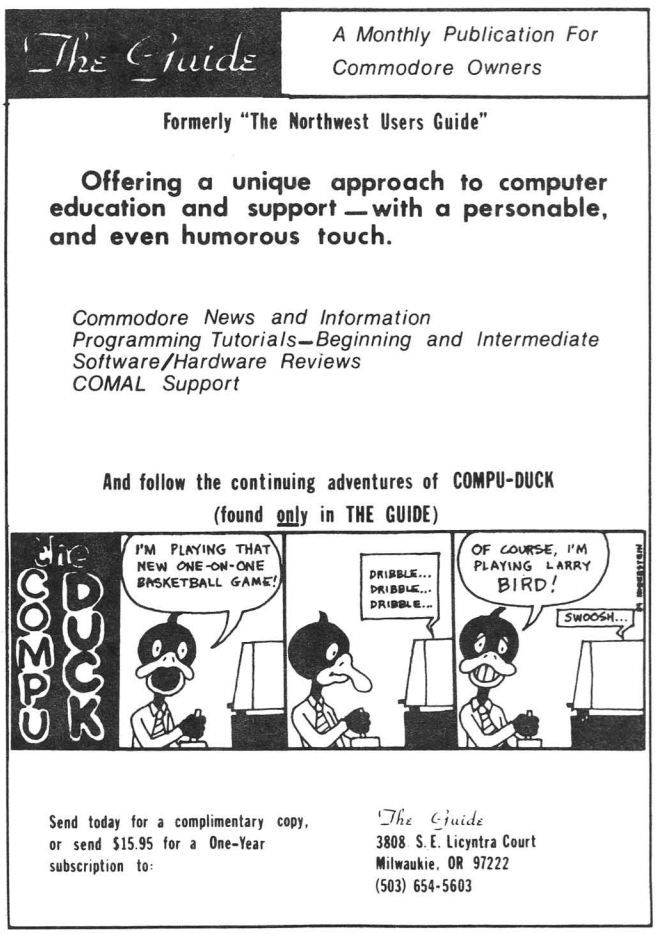
The ads, as strong a picture as they paint, don't even begin to tell how truly powerful this program really is. You can load songs and listen to them, slow them, change the sound, and learn while you have fun. And those who already know their way around in the world of triplets and time signatures will discover a brilliantly designed and powerful tool, capable of serious professional composing. This thing really works! The **Music Construction Set** can even transpose your composition for you. Again an excellent piece of software with thorough and enjoyable documentation. And all at a reasonable price. The beauty of the Construction Set is that you can just wander about, guided by what sounds good. The editing abilities using cut and paste are impressive. The only real criticism is that they didn't make the screen a little easier on the eyes. This is an excellent and supereasy program to use. If only the screen weren't so painful to view, it could hold longer pieces, and it could use all 3 voices instead of only 2.

MUSICALC
Music synthesizer program for the **64.** $50 diskette.
Waveform, 1912 Bonita Way, Berkeley CA 94704
DOS protected. Machine language. 90 day media warranty.
Works with Waveform's Colortone keyboard.
Reviewer: Marc Rosen, Ellen Strasma

Musicalc turns the 64 into a music synthesizer with direct access the the SID chip. You can set parameters just like a synthesizer. The program uses on-screen commands and graphic representations of a real synthesizer, complete with slider controls and pots to turn. It is a also sequencer that will play a series of pre-preprogrammed notes. Waveform provides three modules: the main module for creating your own synthesizer music using the on-screen commands, a keyboard module with pre-programmed scales, and a tempo and style module with Latin and African rhythms presently completed. The idea is to use the keyboard module or one of the temp and style modules as background music to music you create with the main module. You have to remember that **Musicalc** doesn't play in real time; you have to program the length of each note. Moreover, in play mode you can make your 64 sing by typing on the keyboard, but it cannot memorize what you input to the keyboard. Instead, you adjust the voices and filters as you play the music back that you just created. **Musicalc** gains more complete control of the SID chip than any other 64 program, but can be a bit tedious to use as a result. A great program for anyone who loves to use real synthesizers.

S.A.M.
Speech synthesizer for the **64** or **VIC?**
Tronix, 8295 S. La Cienga Blvd., Inglewood CA 90301.
Reviewer: Herb Gross, Ellen Strasma, Bob Wolters

S.A.M. introduced himself and then sang the Star Spangled Banner to one user group. This program uses a software concept that needs to be polished or else it is just pushing the limits of the SID chip. This idea is to give you a Votrax type of speech generator without hardware, but some feel it falls short of the mark. Though a pale voice synthesizer compared to hardware versions, **S.A.M.** needs no hardware other than a TV speaker, and is quite understandable. His voice now "graces" several commercial programs, assuring him at least a small place in history. **S.A.M.** has also been instantly popular with the students at Lincoln College. Recommended for those interested in voice synthesis, but not serious enough about it to buy added hardware.



SYNOPSIS

Most of these programs don't have to be in memory for another program to run. They include programs for language extensions, machine-language monitors, program sorts, and printer aids.

WHAT PROGRAMMING AIDS DO

Programmer's aids ease your work when writing or studying programs. They are **also known as utilities,** meaning useful programs. Aids come in several varieties, **including: BASIC aids, machine-language monitors, sorts, copying programs, emulators, forms editors** and others. Which ones you need depends on your skill level. **At first, you won't need any utilities.** Just using programs will be challenge enough. But later, **when you want to understand the programs you use, and** still later, **when you are ready to improve them, you will find utilities most useful.** And should a dread day come in which a program becomes unusable, other utilities will help make repairs. These however, demand even more skill from you, in order to use them effectively.

As soon as you begin really trying **to write your own BASIC programs, get a BASIC aid.** These add extra helpful commands to CBM/PET BASIC that didn't come in the original language ROM set. And as soon as you begin trying **to use machine-language, you'll need a monitor program** (not the same thing as a video monitor). Monitors add helpful extra commands in machine language the same way that programmers' aids add helpful commands to CBM/PET BASIC.

Commodore computers have been out long enough for commercial companies to produce "potpourri" utility programs based on the original public domain utilities users have thoroughly debugged. Utilities like **Sysres** contain enough features to keep any new user busy for a long time.

WHAT TO LOOK FOR (CHARACTERISTICS)

Most utilities are not protected against copying. This is as it should be. Once you have them, you'll use them constantly. And the last thing you want to have happen is for a utility to suddenly decide somebody's tampering with it and self-destruct while you're using it to repair another program you've worked on a long time, almost lost, and are trying to recover.

Several user groups offer programs as good as or better than some commercial utilities. Do check with your local group before buying utilities.

In the following reviews, each program will describe the specific function it serves. Don't be upset if you don't understand the descriptive phrases; you'll have learned what they mean by the time you need the program.

BASIC AID (CBM/PET) or TINY AID (64)

BASIC programming aid for the **PET, CBM** or **64,** by many users. Free diskette.
Available from user groups. Unprotected (in the public domain).
Reviewer: Jim Strasma

This program has come a long way since its first unofficial release by Commodore U.S. The original was termite-infested. A 4K expansion by Commodore Canada did wonderful things, but still had its bugs. Jim Butterfield's TINY AID pointed the way to fixing several of the bugs. Then under first my care, and then Arthur Cochrane's, it grew again. Now it's mostly reliable and includes nearly every command we could think of. I still use **Basic-Aid** every day. And now, thanks to Brent Anderson, 64 owners can use part if it too, as **Tiny Aid 64.** Recommended.

MICROMON

Machine-language monitor for **all Commodore computers**, by Bill Seiler, Arthur Cochrane, et al. Free cassette or diskette from user groups, or
$25 cartridge from Eastern House Software, 3239 Linda Dr., Winston-Salem NC 27106
Requires Datasette or CBM disk drive. No warranty. Machine-language. Public domain.
Reviewer: Jim Strasma

Micromon is the current version of one of the best and best-known of all programming aids. It is the newest version of an extended machine-language monitor called **Extramon**, originally developed by Bill Seiler for the PET. Many groups and persons (including myself) have had a hand in its development since. Even if you aren't at all ready to program in machine-language, this is a highly useful programmer's aid you may want to have around in anticipation of the day you will either be ready to use it, or in such a jam that nothing else can save your program. **Micromon** monitors (watches over) machine-language programs in much the same way that the BASIC in your computer watches over BASIC programs. With it, a skilled programmer can see where different activities take place inside the computer, and make corrections to repair or improve BASIC programs. But that is only the beginning. The real value of **Micromon** is in helping to write, run and understand machine-language programs, the "native tongue" of your computer. It includes a mini-assembler to write machine-language programs, several commands to help make sense of your own or other peoples' machine-language programs, and even a way to step through a machine-language program one instruction at a time. (This last feature is similar to the "trace" command some programmer's aids add to BASIC.) There are also commands to convert letters and numbers from one of several internal codes to the others. Perhaps most useful of all is a recently enhanced "hunt" (with a new "don't care" option) command that looks for a desired pattern in memory, (much like the "find" command some programmer's aids add to BASIC.) The disassembler and memory dump commands even scroll up and down through memory, just as the very best BASIC programmer's aids scroll up and down through BASIC listings. An optional enhancement, called **Micromon Plus**, also available from user groups extends the program even further, to include extra printer features and even a "load here regardless" command. This last allows you to put any program anywhere you choose in memory. The **Micromon** and **Plus** combination is better than anything else on the market at any price. That it is also in the Public Domain makes it even more desirable. Now the Eastern House Software offers it that way, I like it even better on cartridge. **Micromon** is one of the most important programs we own. No serious programmer should be without it. Highly recommended.

POWER

BASIC programming aid for the **CBM, PET** or **64**, by Brad Templeton.
$100 diskette or cartridge.
Pro-Line Software, 755 The Queensway East, Unit 8, Mississauga ONT L4Y 4C5 CANADA.
Requires 1541 disk drive.
Unstated warranty. Written in machine-language. DOS protected.
Reviewers: Bob Bergevin, Keith Peterson, Jim Strasma

This well-known program is among the very best BASIC programmer's aid programs. It includes the usual commands, but improves on most of them significantly, and adds a few. If you are lucky enough to find it in cartridge form, it will probably be one of your favorite programs. The slightly strange commands are easy to get used to. Even on disk, it is very impressive. What is the power of **Power**? For openers, it has an excellent beginners' manual by Jim Butterfield, with an equally good reference section by author Brad Templeton. All it lacks is a quick reference sheet of options--and reader patience in learning to use all its features. The manual also explains how to call its features from other programs, change the way it works, and even add more commands. The Section Renumber and the Automatic Smooth Scrolling both ways are great.

Power's best feature is **Morepower**, a Public Domain add-on that makes **Power** a bit smoother and a bit better that the other aid programs. Among the many features of

Morepower are a "start" command that shows the loading address of any program, and the ability to execute any program on disk as a subprogram simply by typing its name as a command. **Morepower** also makes up for some of the obvious weaknesses in **Power**, (such as the lack of a "merge" command). You can scroll through a BASIC program with the cursor keys. You can also "change" most anything in the program, "trace" your way through a running BASIC program in several ways, and hold two BASIC programs in memory at once. Since the PET version turns off IEEE timeouts, your terminal and some disk programs may freeze at inopportune times if you have it turned on. **Power** will load along with Templeton's other popular program, the **Pal** assembler. Together they are excellent for assembly-language programming. The combination is sold as **Tool Box 64** for $179. However, those wanting the very best programmer's aid may end up with **Sysres** instead (see separate review). It shares all but 8 of **Power**'s features, and adds 21 more of its own, each as well done as those in **Power**. It is also able to load from disk without losing a BASIC program already in memory, and allows the user to make safety backups of the program. Even so, the really lucky programmer will have both **Power** and **Sysres**. **Power** is a very powerful, yet easy to use, programming aid.

SUBSORT (formerly SUPERSORT)
Machine language sort for the **CBM, PET** or **64**, by James Strasma. $35 diskette.
Midnite Software, 1238 Richland Av., Lincoln IL 62656
Full warranty. Written in machine-language. Unprotected.
Reviewers: Robert Baker, Elizabeth Deal

Elizabeth Deal was suddenly faced with some serious sorting tasks on files she didn't write, so she broke down and got **Subsort** from AB Computers. It's dynamite. Of course it works; it's easy and simple to use and the built-in flexibility permitted me to do the thing in no time at all, since she had on a little file editing to do. **Subsort** takes less than 1200 bytes at top of memory, works with all current PET BASICs and adjusts to any memory size as it loads. It won't destroy other programs loaded into high memory, and can sort an array of 3000 integers in less than 30 seconds. You can sorts any BASIC string or integer array in ascending or descending order. Some options are: arrays can be 1 or 2 dimensional, and sorts can be specified on any desired field in 2nd dimension; can subsort other fields when match found in prime sort field; and can sort by bit mapping, with 8 categories per byte. Options are set with simple POKE statements prior to calling **Subsort** via SYS. Comments are used to pass parameters consists of 13 bytes in 2nd cassette buffer. The program avoids parts of the buffer used by BASIC and DOS.

During a sort, 44 locations after 886 in the buffer and the first 44 locations in page zero are exchanged, then restored at end. Sorting only part of an array drastically speeds things up. If you tell **Subsort** where the real data ends, you'll save up to 90% of usual sort time. It puts null string elements at top of sorted array, away from user data. The program sets variable ST to indicate errors which occur. STOP key still enabled, allowing you to terminate execution. An excellent utility and apparently 'bullet proof.' It has complete documentation, with very enlightening demo program. It's a worthwhile investment if you do any data manipulations. Why reinvent the wheel when you have this handy sort program? A source listing is available to customers for $10.

SYSRES
BASIC programming aid for the **64**. $80 diskette.
Solidus International, 4202 Guide Meridian, #204, Bellingham WA 98226 (206/734-3744).
Requires CBM disk drive. Printer optional.
Hotline support. Written in machine-languge. DOS protected (3 backups allowed).

Sysres is an excellent program to make programming in BASIC easier, unless you want your programmer's aid in ROM. Though it lacks internal documentation and must be loaded from disk for each use, it doesn't destroy a BASIC program already in memory (great, because you want to load it after a program crashes!). On the 64, **Sysres** hides itself in a

location that doesn't interfere with the regular BASIC language storage locations, leaving all visible RAM free, except one page of memory at $C000. It includes a utility to relocate any competitor for that space. The **Sysres** diskette creates itself on another diskette when you first load the program. Like a genie, it gives you three chances to make a spare diskette. Be sure to create a different version using RTC's C-64 Link interface and 4040 disk drive than when using a 1541 disk drive alone. **Sysres** created quite a furor when first released, because, in spite of being the best of programmer's aids, it is a protected utility program that wipes memory if it detects "tampering." This is inherently dangerous, and inferior to a ROM-based program (such as **Power**).

What does **Sysres** actually do? As an editor, it edits sequential files from BASIC like CBM's **Editor/Assembler**, scrolls listings both up and down, copies the screen to a printer, and gets out of the way when a program RUNs (to keep the program from running too slowly). As if that were not enough, it adds more commands to control the disk drive, as well as new BASIC commands to control the computer. For instance, EXEC runs a sequential file as though you were typing on the keyboard, GET loads a sequential file, KEY defines keys for special functions; and OLD undoes a NEW. Best among the improved commands are RENUMBER (changes some or all line numbers in a program), CHANGE (700 combinations of sub-options), and MERGE (mixes programs line by line), CLOSE (undoes any current CMD commands), CMD (no longer sends "ready." to files), LIST (formats programs with good structure), and RUN (ignores garbage on the screen). MON exits BASIC to a machine-language monitor. Also includes several versions of EXTRAMON, our #2 favorite. Last, but not least, **Sysres** sets the screen to a pleasant green on black with grey border at power-up. If this program were in ROM or in a cartridge, it would be absolutely tops. Recommended.

VICTREE

BASIC programming aid for the **64** or **VIC**, by Rob Chang.
$90 cartridge ($110 with parallel printer interface).
Skyles Electric Works, 231 E. South Whisman Rd., Mountain View CA 94041
Requires Disk or Datasette. Printer or Centronics parallel printer interface optional.
No stated warranty. Written in machine-language. Protected.
Reviewer: Jim Strasma

For anyone who does BASIC programming, a utility ROM like this one is a MUST. Plug it into your cartridge slot on your 64 or VIC, type a SYS command, and you're off. **VICtree** takes 8K of RAM from the 64. Since it only starts up after you type a SYS command, it doesn't slow down the speed of a running program in BASIC when VICtree isn't needed, but eliminates a reason for having it in a cartridge. **VICtree** does everything it claims to do. It adds 42 commands to BASIC. These include all the more advanced Commodore BASIC 4.0 commands, except for the faster ways to handle strings. Other commands ease your work with disk drives, function keys, and printers. With their parallel printer interface connected, you can do dot-addressable graphics, backspacing, underlining and much more. It also adds a link to Skyles' computer networking interface, and typical programmer's aid commands, from 'auto' (line numbering) to 'trace' (a running a program line by line). Of the new commands, our favorite is LMOVE, which moves a range of lines within a program. How often have you wished to reorganize a group of subroutines from the end of a program to the start to speed up the program? This is the only aid we've seen that can do that chore on the 64. It has one glitch so far: it is supposed to be transparent to the **Super Expander**, but after performing a DSAVE (Save to Disk), the function keys no longer generate the **Super Expander** keywords, and the computer may crash.

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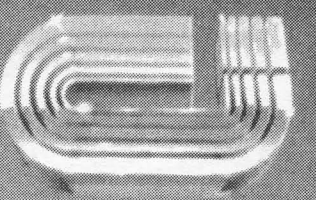

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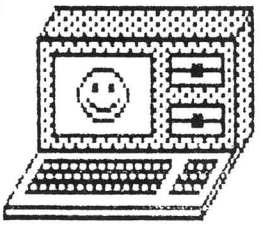

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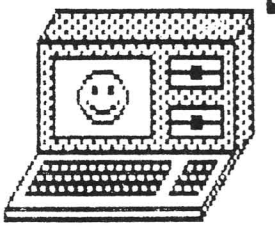

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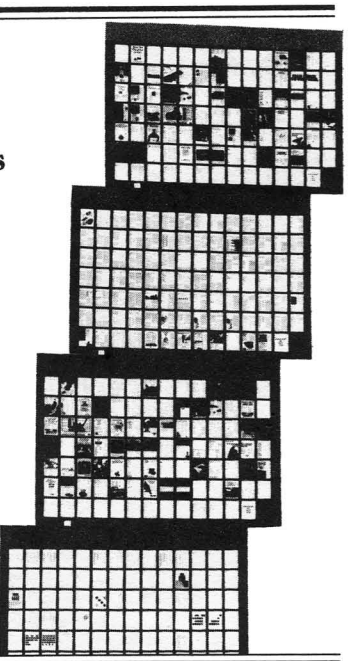

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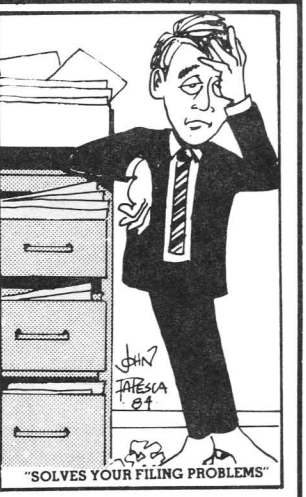

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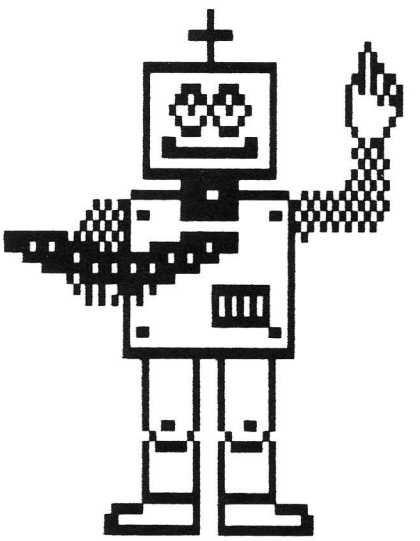

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